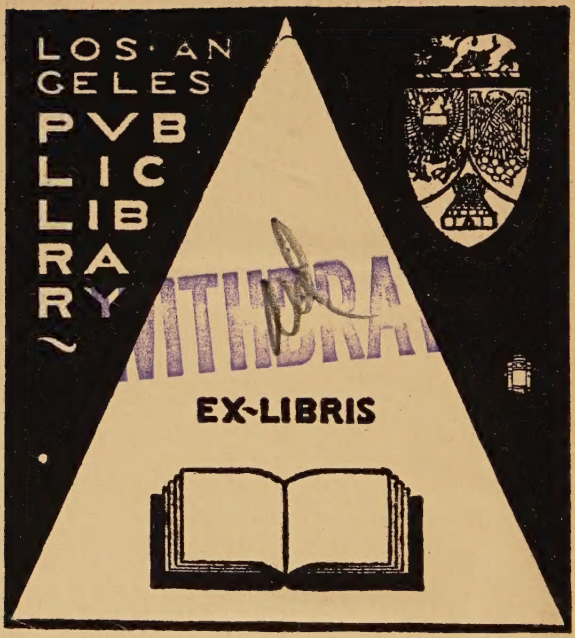
MANUAL OF BASIC TRAINING
AND
STANDARDS OF PROFICIENCY
FOR
THE NATIONAL GUARD

VOLUME III

1927





R 355.34 U55 v.3
COP. 10

LILLIAN MICHELSON
RESEARCH LIBRARY
(GOLDWYN STUDIOS COLLECTION)
THE HOLLYWOOD GROUP
6233 HOLLYWOOD BLVD.
213-462-8884 213-654-7177

LILLIAN GISH
(GOLDWYN STUDIO COLLECTION)
THE
6233
213-462-8884 213-654-7177

MANUAL

OF

BASIC TRAINING

AND

STANDARDS OF PROFICIENCY

FOR

THE NATIONAL GUARD

VOL. III

COAST ARTILLERY

(HARBOR DEFENSE)

WEAPONS AND MARKSMANSHIP—SMALL ARMS

Reference

R 355.34 U55 v.3



COP. 10

55319 15

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON
1927

(S)

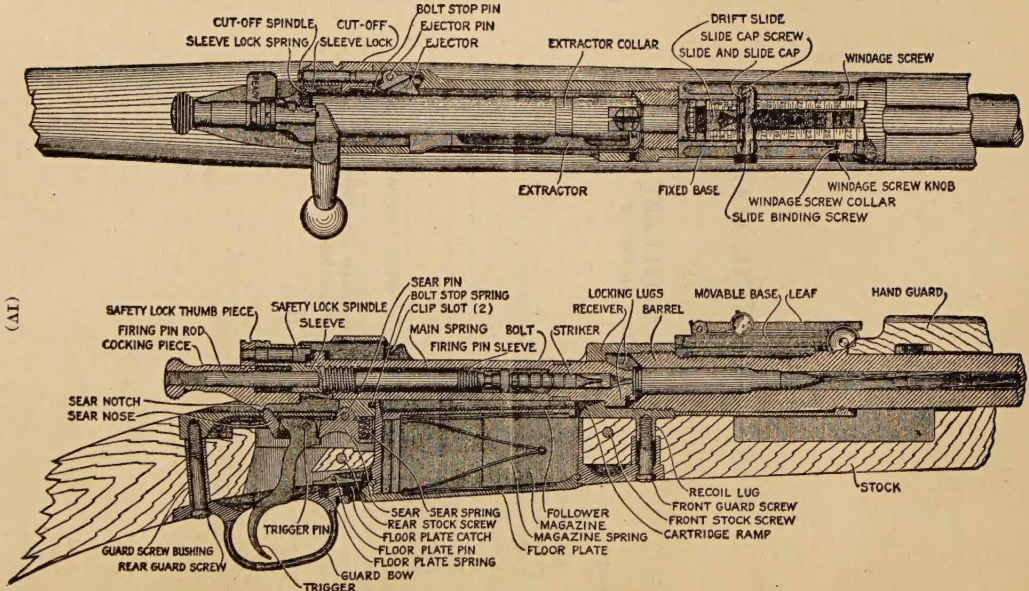
War Department
Militia Bureau
Document No. 918

BASIC TRAINING MANUAL

VOL. III

COAST ARTILLERY
(HARBOR DEFENSE)

		Page
1.	Weapons:	
	United States rifle	1
	Automatic rifle	23
	Automatic pistol	104
	Care and cleaning of weapons	122
2.	Marksmanship:	
	Rifle, general	131
	Rifle, individual	188
	Automatic rifle	246
	Pistol, dismounted	297
3.	Instruction and qualification with bayonet	351
4.	Hand and rifle grenades	403
5.	Instruction and qualification with grenades	417
6.	Basic specifications for qualification	351



United States rifle, caliber .30, model of 1903

COP. 10

55319 15

WEAPONS

UNITED STATES RIFLE, CALIBER .30, MODEL OF 1903, ACCESSORIES AND APPENDAGES

(T. R 320–10)

	Paragraphs
SECTION I. Description of rifle	1
II. Description of assemblies, groups, and parts of rifle	2
III. The bayonet, model of 1905, and the bayonet scabbard	26
IV. Appendages and accessories	29
V. Mechanical operation of the rifle	31
VI. Care of the rifle	33
VII. Tabulated data	36

SECTION I

DESCRIPTION OF RIFLE

1. *General.*—The United States rifle, caliber .30, model of 1903, is the only caliber .30 rifle at present authorized for general issue to the service. It is sometimes popularly referred to as the "Springfield rifle," because it was first made and is still made at the Springfield Armory, Springfield, Mass. It is a breech-loading magazine rifle of the bolt type. The magazine of the rifle will hold five cartridges and one additional cartridge may be inserted in the chamber, thus making the maximum capacity of the rifle, for any one loading, six shots. In order to facilitate the loading of the magazine, cartridges are ordinarily put up in brass clips, holding five cartridges each. The magazine, however, may be loaded by inserting single cartridges by hand, one after the other. The total weight of the rifle, including oiler and thong case, but without bayonet, is 8.69 pounds. The bayonet weighs 1 pound.

Section II

ASSEMBLIES, GROUPS, AND PARTS OF RIFLE

2. *General statement.*—For convenience the parts of the rifle have been grouped together in "groups" and "assemblies." A group is a number of parts which function together in the rifle and which are naturally intimately related to each other and should, therefore, be considered together. An assembly consists of two or more parts which are either permanently or semipermanently assembled and should not ordinarily be taken apart. An assembly is frequently issued as a unit for maintenance purposes. The groups, assemblies, and individual parts are listed in the following paragraphs of the section in the order in which they would be taken from the rifle in case the later was completely disassembled.

3. *Bolt and firing pin group.*—The bolt and firing pin group can be removed from the rifle as a unit, and includes the *extractor;* the *bolt assembly,* consisting of the *bolt* and the *extractor collar;* the *striker;* the *firing pin sleeve;* the *mainspring;* the *bolt sleeve assembly;* the *safety lock assembly;* and the *firing pin assembly.*

4. *Ejector group.*—The ejector group consists of the *ejector* and the *ejector pin.*

5. *Bolt stop assembly.*—The bolt stop assembly consists of the *bolt stop pin* and the *bolt stop spring* permanently riveted together in manufacture.

6. *Cut-off group.*—The cut-off group includes the *cut-off,* the *cut-off spindle,* the *cut-off screw,* and the *cut-off spring.*

7. *Floor plate group.*—The floor plate group includes the *floor plate,* the *floor plate catch,* the *floor plate pin,* and the *floor plate spring.*

8. *Magazine spring.*—The magazine spring; the smaller end slides into the under cuts on the follower, and the larger end fits in the same way into the undercuts in the floor plate.

9. *Follower.*—The follower, which serves to locate the cartridges in the magazine and guides the last cartridge into the chamber.

10. *Guard group.*—The guard group consists of the *guard,* the *guard screw bushing,* the *rear guard screw,* and the *front guard screw.*

11. *Sear and trigger group.*—The sear and trigger group includes the *sear,* the *sear spring,* the *sear pin,* the *trigger,* and the *trigger pin.*

12. *Front sight group.*—The front sight group includes the *movable stud assembly* and the *front sight screw.*

13. *Rear sight assembly.*—The rear sight assembly includes the *rear sight movable base,* the *rear sight windage screw,* the *rear sight windage screw collar,* the *rear sight windage screw spring,* the *windage screw knob,* the *rear sight base spring,* the *rear sight leaf,* the *rear sight joint pin,* the *rear sight slide,* the *rear sight slide cap,* the *rear sight slide cap screw,* the *rear sight slide binding screw,* the *rear sight slide cap pin,* the *rear sight drift slide,* and the *rear sight drift slide pin.*

14. *Butt plate assembly.*—The butt plate assembly includes the *butt plate,* the *butt plate cap,* the *butt plate pin,* the *butt plate spring,* and the *butt plate spring screw.*

15. *Butt plate screws.*—The butt plate screws, large and small, secure the butt plate to the stock.

16. *Butt swivel assembly.*—The butt swivel assembly includes the *butt swivel,* the *butt swivel pin,* and the *butt swivel plate.*

17. *Butt swivel screws.*—The butt swivel screws are the same as the butt plate screw, small, and serve to attach the butt swivel plate to the stock.

18. *Lower band group.*—The lower band group includes the *lower band,* the *lower band screw,* the *lower band swivel,* and the *lower band spring.*

19. *Upper band group.*—The upper band group includes the *upper band,* the *upper band screw,* the *stacking swivel,* and the *stacking swivel screw.*

20. *Stock.*—The stock. The large hole in the butt is for decreasing weight, and the smaller one is a pocket for the combination oiler and thong case or spare part container.

The initials of the inspector and the year of fabrication are stamped on the left side in the rear of the cut-off thumb piece recess.

21. *Stock screws and nuts.*—The stock screws and nuts, front and rear, are identical in form, but slightly different in dimensions.

22. *Hand guard.*—The hand guard has the *swell,* for the protection of the rear sight (in which is a groove for sight clearance); the *shoulder for the lower band;* the *shoulder for the upper band;* the *rear tenon,* which enters the undercut in the fixed base; the *front tenon,* which enters the undercut in the upper band; the *clearance, for the windage screw knob; air chamber,* and *recess for the hand guard clips.*

23. *Hand guard clips.*

24. *Barrel assembly.*—The barrel assembly includes the *barrel*, the *fixed stud*, the *fixed stud pin*, the *fixed base*, the *fixed base spline*, and the *fixed base pin.*

25. *Receiver.*—The receiver has the hole, called the *well*, which receives the bolt; the *magazine opening;* the *channel* for the top locking lug; the *cut-off seat;* the *cut-off thumb piece recess; ejector pin hole; clip slots; cocking piece groove; sear noes slot; extracting cam; sear pinhole; gas escape hole; recoil lug*, in which is the hole for the front guard screw; the *recesses for the bolt locking lugs;* the *locking cams;* the *locking shoulders* the *safety shoulder;* and the *cartridge ramp.*

On the upper surface of the front end is stamped the serial number of the rifle and the place of manufacture.

Section III

THE BAYONET, MODEL OF 1905, AND THE BAYONET SCABBARD

26. *Bayonet, model of 1905.*—The *bayonet*, model of 1905, consists of—

a. The *blade*, the *tang*, and the *pommel*, which are forged in one piece; the front or lower edge is sharp along its entire length and the back for a distance of 5 inches from the point.

The blade is stamped on its left side with the ordnance escutcheon and the initials of the place and year of manufacture, and on the right side with the letters "U. S." and the serial number.

Immediately in the rear of the *guard* the tang swells and is recessed to receive the *scabbard catch* and the *bayonet spring.* The swell in the tang also serves as a seat for the guard, which is riveted to the blade in manufacture.

The opening in the tang and pommel for the *bayonet catch* connects with the recess in the swell of the tang and allows the front end of the bayonet catch to enter its seat in the bayonet scabbard catch. The *undercut groove* receives the stud on the upper band when the bayonet is fixed, the bayonet being held in place by the bayonet catch projecting through the *hole.*

b. The *bayonet guard* has the *barrel hole*, the *mortise* for the blade, the *cut* for the bayonet scabbard catch and scabbard mouthpiece hook, and the *clearance cut* for the scabbard mouthpiece hook. There are also two holes for the bayonet rivets, by means of which the bayonet guard is riveted to the blade.

27. *Bayonet scabbard, model of 1905.*—The bayonet scabbard, model of 1905, has the *wooden body*, made in two pieces and glued together; the *rawhide cover*, which increases the strength of the scabbard; the *leather cover;* the *mouthpiece bushing;* the *mouthpiece top;* the *mouthpiece body;* riveted to the wooden body by the *rivets;* the *mouthpiece hooks*, either of which by its engagement with the hook of the bayonet scabbard catch on the bayonet retains the bayonet in its place in the scabbard; the *scabbard hook*, attached to the body by the *hook rivet*, which passes through the *inside* and *outside washers*, and the *stop washer;* the *fastener*, and the *drain eyelet.* An offset on the lower end of the hook, traveling in its recess in the stop washer, limits the oscillation of the hook at 50° on each side of the vertical.

28. *Bayonet scabbard, model of 1910.*—The bayonet scabbard, model of 1910, consists of a wooden body covered with rawhide, over which is sewed a duck cover, or is fitted a woven fabric cover, olive-drab in color. The bayonet is held fast in the scabbard by means of two mouthpiece hooks on opposite sides of the mouthpiece top. The scabbard is fastened to the belt or pack of the soldier by a double-hook, which is attached to the scabbard by the duck hanger sewed to the cover.

Section IV

APPENDAGES AND ACCESSORIES

29. *Appendages.*—Appendages consist of *drift slide No. 4* and *drift slide No. 6*, the *oiler and thong case*, the *thong and thong brush*, the *spare part container*, and the *front sight cover.*

a. The *drift slide No. 4* and *drift slide No. 6* are furnished, two of each for every 10 rifles. The 2 drift slides have peepholes respectively 0.04 inch and 0.06 inch in diameter, and have drift slide pins assembled to them.

b. The *oiler and thong case*, furnished for every rifle, is carried in the butt of the stock. It consists of a sand-blasted brass tube, nickel plated but not polished, about 6 inches long and ¾ inch in diameter, divided transversely near the center by a partition. Both ends are closed by screw caps. In one section is carried a small supply of sperm oil, and in the other the thong and thong bush used for cleaning the bore of the rifle. The cap on the oil section is fitted with a wire, flattened at its point, which reaches to the bottom of the section and is

used for applying oil, a drop or more at a time. *The oil is only for the lubrication of working parts.* The cap is also provided with a leather washer to prevent leakage. The cap on the thong section has a leather pad on its outer surface, which prevents the noise that would result from the oiler striking the butt plate cap. The oiler should always be inserted in the stock so that the leather-tipped cap will be next to the butt plate cap.

c. The *thong and thong brush.* The *thong tip*, into which the *thong brush* is screwed, is provided with a *rag slot;* the thong cord is knotted in the *hole* in the tip, and also in the *hole* in the weight. In cleaning the bore by means of the thong, the brush or rag should always be drawn from the muzzle toward the breech.

d. The *spare part container* consists of a cylindrical block of wood (hard maple), 5.8 inches long and 0.785 inch in diameter. Slots and recesses are cut for holding three spare parts—a striker, an extractor, and a firing pin. The container may be carried in the butt of the stock, in lieu of the oiler and thong case.

e. The *front sight cover* is made of sheet steel and pressed into shape. It is then casehardened, giving it sufficient spring to cause it to hug closely the barrel and front sight stud, thereby retaining its position on the barrel.

30. *Accessories.*—Accessories consist of the *screw driver*, the *barrack cleaning rod, model of 1916*, and the *cleaning rod, model of 1916.*

a. The *screw driver* has the *large blade*, the *small blade*, the *spur*, the *pin*, and the *rivet.* The large blade should be used for the large butt plate screw, the butt plate spring screw, and the guard screws; the small blade for all other screws, except the cut-off screw, for which the spur should be used. The pin serves as a drift in removing the butt plate cap, ejector, floor plate catch, sear and trigger pins, and the lower band spring.

b. The *barrack cleaning rod*, model of 1916, is made of brass rod, 0.25 inch in diameter, and of sufficient length so that the bore can be cleaned from the breech end. It has the *knob*, the *steel collar*, and a *brass sleeve* riveted on the end of the rod. The knob swivels on the rod between the collar and the sleeve. The other end has a socket for connection with the thong brush issued with the rifle. This rod is intended for use in garrison and camp service.

c. The *cleaning rod, model of 1916.*—The new rod is a jointed brass rod, 0.25 inch in diameter and 36.187 ($36\frac{3}{16}$) inches long. It is made of four sections; the handle section with knob, the second section, the third section, and the brush section, to which may be attached the thong brush issued with the rifle. This rod and case are intended for use in field service only.

SECTION V

MECHANICAL OPERATION OF THE RIFLE

31. *Assembled parts and their operation.*—Most of the operating parts may be included under the bolt mechanism and the magazine mechanism.

a. The bolt moves backward and forward and rotates in the well of the receiver; it carries a cartridge, either from the magazine, or one placed by hand in front of it, into the chamber and supports its head when fired.

The sleeve unites the parts of the bolt mechanism, and its rotation with the bolt is prevented by the lugs on its sides coming in contact with the receiver.

The hook of the extractor engages in the groove of the cartridge case and retains the head of the latter in the countersink of the bolt until the case is ejected.

The safety lock, when turned to the left, is inoperative; when turned to the right—*which can only be done when the piece is cocked*—the point of the spindle enters its notch in the bolt and locks the bolt; at the same time its cam forces the cocking piece slightly to the rear, out of contact with the sear, and locks the firing pin.

The bolt mechanism operates as follows: To open the bolt, raise the handle until it comes in contact with the left side of the receiver and pull directly to the rear until the top locking lug strikes the cut-off.

Raising the handle rotates the bolt and separates the locking lugs from their locking shoulders in the receiver, with which they have been brought into close contact by the powder pressure. This rotation causes the cocking cam of the bolt to force the firing pin to the rear, drawing the point of the striker into the bolt, rotation of the firing pin being prevented by the lug on the cocking piece projecting, through the slot in the sleeve, into its groove in the receiver. As the sleeve remains longitudinally stationary with reference to the bolt,

this rearward motion of the firing pin, and consequently of the striker, will start the compression of the mainspring, since the rear end of the latter bears against the front end of the barrel of the sleeve and its front end against the rear end of the firing pin sleeve.

When the bolt handle strikes the receiver, the locking lugs have been disengaged, the firing pin has been forced to the rear until the sear notch of the cocking piece has passed the sear nose, the cocking piece nose has entered the cock notch in the rear end of the bolt, the sleeve lock has engaged its notch in the bolt, and the mainspring has been almost entirely compressed.

During the rotation of the bolt a rear motion has been imparted to it by its extracting cam coming in contact with the extracting cam of the receiver, so that the cartridge case will be started from the chamber.

The bolt is then drawn directly to the rear, the parts being retained in position by the cocking piece nose remaining in the cock notch and locked by the sleeve lock engaging its notch in the bolt.

To close the bolt, push the handle forward until the extracting cam on the bolt bears against the extracting cam on the receiver, thereby unlocking the sleeve from the bolt, and turn the handle down. As the handle is turned down the cams of the locking lugs bear against the locking shoulders in the receiver, and the bolt is forced slightly forward into its closed position. As all movement of the firing pin is prevented by the sear nose engaging the sear notch of the cocking piece, this forward movement of the bolt completes the compression of the mainspring, seats the cartridge in the chamber, and, in single loading, forces the hook of the extractor into the groove of the cartridge case. In loading from the magazine the hook of the extractor, rounded at its lower edge, engages in the groove of the top cartridge as it rises from the magazine under the action of the follower and magazine spring.

The piece is then ready to fire.

To pull the trigger, the finger piece must be drawn to the rear until contact with the receiver is transferred from its bearing to the heel, which gives a creep to the trigger, and then until the sear nose is withdrawn from in front of the cocking piece.

Just before the bolt is drawn fully to the rear the top locking lug strikes the heel of the ejector, throwing its point suddenly to the right in the lug slot. As the bolt moves fully to the

rear, the rear face of the cartridge case strikes against the ejector point and the case is ejected, slightly upward and to the right, from the receiver.

Double loading from the magazine is prevented by the extractor engaging the cartridge case as soon as it rises from the magazine and holding its head against the face of the bolt until ejected.

It will be noted that in this system of bolt mechanism the compression of the mainspring, the seating of the cartridge in and the starting of the empty case from the chamber are entirely done by the action of cams.

The piece may be cocked either by raising the bolt handle until it strikes the left side of the receiver and then immediately turning it down or by pulling the cocking piece directly to the rear.

In firing, unless the bolt handle is turned fully down, the cam on the cocking piece will strike the cocking cam on the bolt, and the energy of the mainspring will be expended in closing the bolt, instead of on the primer; this prevents the possibility of a cartridge being fired until the bolt is fully closed.

The opening and closing of the bolt should each be done by one continuous motion.

b. The *magazine mechanism* includes the floor plate, follower, magazine spring, and cut-off.

To charge the magazine, see that the cut-off is turned up showing "on," draw the bolt fully to the rear, insert the cartridges from a clip, or from the hand, and close the bolt. To charge the magazine from a clip, place either end of a loaded clip in its seat in the receiver and with the thumb of the right hand press the cartridges down into the magazine until the top cartridge is caught by the right edge of the receiver. The cartridges arrange themselves in the magazine, depressing the follower and magazine spring. The cartridge ramp guides the bullet and cartridge case into the chamber. The magazine can be filled, if partly filled, by inserting cartridges one by one.

Pushing the bolt forward, after charging the magazine, ejects the clip.

When the cut-off is turned down, the magazine is "off." The bolt can not be drawn fully back, and its front end projecting over the rear end of the upper cartridge holds it down in the magazine below the action of the bolt. The magazine mechanism then remains inoperative, and the arm can be used as a single-loader, the cartridges in the magazine being held in

reserve. The arm can readily be used as a single-loader with the magazine empty.

When the cut-off is turned up the magazine is "on." The bolt can be drawn fully to the rear, permitting the top cartridge to rise high enough to be caught by the bolt in its forward movement. As the bolt is closed this cartridge is pushed forward into the chamber, being held up during its passage by the pressure of those below. The last one in the magazine is held up by the follower, the rib on which directs it into the chamber.

In magazine fire, after the last cartridge has been fired and the bolt drawn fully to the rear, the follower rises and holds the bolt open to show that the magazine is empty.

c. Precautions.—If it is desired to carry the piece cocked, with a cartridge in the chamber, the bolt mechanism should be secured by turning the safety lock to the right. Under no circumstances should the firing pin be let down by hand on a cartridge in the chamber.

To obtain positive ejection, and to insure the bolt catching the top cartridge in magazine, when loading from the magazine, the bolt must be drawn fully to the rear in opening it.

When the bolt is closed, or slightly forward, the cut-off may be turned up or down, as desired. When the bolt is in its rearmost position, to pass from loading from the magazine to single loading it is necessary to force the top cartridge or follower below the reach of the bolt, to push the bolt slightly forward and to turn the cut-off down, showing "off."

In case of a misfire it is unsafe to draw back the bolt immediately, as it may be a case of hangfire. In such cases the piece should be cocked by drawing back the cocking piece.

It is essential for the proper working and preservation of all cams that they be kept lubricated.

Never fire the rifle with cosmoline in the bore or any obstruction in the bore whether near the breech or the muzzle. Practically all cases of burst barrels can be traced to some obstructions left in the bore, such as a cleaning patch, mud, or the like.

32. *Dismounting and assembling by soldier.*—The bolt and magazine mechanism can be dismounted without removing the stock. The latter should never be done, except for making repairs, and then only by some selected and instructed man.

a. To *dismount bolt mechanism*, place the cut-off at the center notch; cock the arm and turn the safety lock to a vertical position, raise the bolt handle and draw out the bolt.

Hold bolt in left hand, press sleeve lock in with thumb of right hand to unlock sleeve from bolt, and unscrew sleeve by turning to the left.

Hold sleeve between forefinger and thumb of the left hand, draw cocking piece back with middle finger and thumb of right hand, turn safety lock down to the left with the forefinger of the right hand, in order to allow the cocking piece to move forward in sleeve, thus partially relieving the tension of mainspring; with the cocking piece against the breast, draw back the firing pin sleeve with the forefinger and thumb of right hand and hold it in this position while removing the striker with the left hand; remove firing pin sleeve and mainspring; pull firing pin out of sleeve; turn the extractor to the right, forcing its tongue out of its groove in the front of the bolt, and force the extractor forward and off the bolt.

b. To *assemble bolt mechanism*, grasp with the left hand the rear of the bolt, handle up, and turn the extractor collar with the thumb and forefinger of the right hand until its lug is on a line with the safety lug on the bolt; take the extractor in the right hand and insert the lug on the collar in the undercuts in the extractor by pushing the extractor to the rear until its tongue comes in contact with the rim on the face of the bolt (a slight pressure with the left thumb on the top of the rear part of the extractor assists in this operation); turn the extractor to the right until it is over the right lug; take the bolt in the right hand and press the hook of the extractor against the butt plate or some rigid object, until the tongue on the extractor enters its groove in the bolt.

With the safety lock turned down to the left to permit the firing pin to enter the sleeve as far as possible, assemble the sleeve and firing pin; place the cocking piece against the breast and put on mainspring, firing pin sleeve, and striker. Hold the cocking piece between the thumb and forefinger of the left hand, and by pressing the striker point against some substance, not hard enough to injure it, force the cocking piece back until the safety lock can be turned to the vertical position with the right hand; insert the firing pin in the bolt and screw up the sleeve (by turning it to the right) until the sleeve lock enters its notch on the bolt.

See that the cut-off is at the center notch; hold the piece under floor plate in the fingers of the left hand, the thumb extending over the left side of the receiver; take bolt in right hand with safety lock in a vertical position and safety lug

up; press rear end of follower down with left thumb and push bolt into the receiver; lower bolt handle; turn safety lock and cut-off down to the left with right hand.

c. To *dismount magazine mechanism.*—With the bullet end of a cartridge press on the floor plate catch (through the hole in the floor plate), at the same time drawing the bullet to the rear; this releases the floor plate.

Raise the rear end of the first limb of the magazine spring high enough to clear the lug on the floor plate and draw it out of its mortise; proceed in the same manner to remove the follower.

d. To *assemble magazine mechanism.*—To assemble magazine spring and follower to floor plate, reverse operation of dismounting.

Insert the follower and magazine spring in the magazine, place the tenon on the front end of the floor plate in its recess in the magazine, then place the lug on the rear end of the floor plate in its slot in the guard, and press the rear end of the floor plate forward and inward at the same time, forcing the floor plate into its seat in the guard.

Section VI

CARE AND CLEANING OF THE RIFLE

33. *Reference.*—Directions for care and cleaning the piece follow in paragraphs 88 to 98. Every man to whom the piece is issued must be held personally responsible that it is in serviceable condition at all times. Only by careful observance of the instructions can proper care be exercised. It is therefore the distinct responsibility of the company commander that his men are first adequately instructed in this important matter before he can justly hold them accountable.

34. *Improving performance of rifle* (not to be done by soldier).—*a. Working down bolt.*—When the bolts of rifles fail to function smoothly they may be worked down under the supervision of division, post, camp, or station *ordnance officers*, in the following manner:

(1) *Abrasive.*—To the best Turkish flour of emery add enough kerosene oil to make a medium thin paste. Apply with end of a match or sliver of wood. Valve-grinding compound may be used in lieu of Turkish flour of emery.

(2) *First operation* (*smoothing extracting cam*).—Strip down arm to receive, barrel, and bolt. Remove firing-pin mechanism from bolt. Place receiver with barrel attached in bench vise, using either wood or leather between vise jaws to prevent damage to arm. Muzzle and chamber of the barrel to be plugged with a small rag. The front or muzzle end of barrel to be slightly elevated in vise. Apply a small quantity of abrasive (mixed as stated above) to the primary extracting cam (situated at the left rear end of receiver). Enter bolt in rereceiver. Apply mixture to extracting cam of bolt. Grasp handle of bolt in palm of right hand and with a forward pressure upon bolt handle rotate handle of bolt rapidly back and forth, at the same time maintaining enough forward pressure upon bolt to keep cam surface of receiver and bolt in contact. Continue this operation until a smooth, regular surface is obtained upon both cam surfaces. Wipe dry and thoroughly clean all surfaces of *bolt* and *receiver* from *all traces of abrasive used*, and then rinse thoroughly in gasoline.

(3) *Second operation* (*smoothing cocking cam*).—Reassemble firing-pin mechanism to bolt. Apply a small quantity of abrasive mixture to cocking cam surfaces of both bolt and cocking piece. Enter bolt in receiver. Close bolt. Be sure that trigger and sear are removed from receiver. Grasp bolt handle in palm of right hand, and, with a slight forward pressure upon bolt handle, rapidly cock and release firing pin by rotating bolt handle up and down. Continue this operation until a satisfactory smooth surface is obtained. Clean, dry, and wash all surfaces thoroughly from *all traces of the abrasive*, as it is very important that no trace remain to cause undue wear and injury to mechanism.

(4) *Third operation* (*freezing extractor collar*).—Provide a pair of special hardwood jaws with a recess to engage lug of of extractor collar and clearance for body of extractor collar. Place jaws in vise, inserting bolt so that lug on extractor collar falls in dogging slot provided. Close vise with jaws encircling body of bolt, allowing bolt to be freely rotated. A 0.25-inch hole should be drilled in the hardwood vise jaws to allow for insertion of the lubricating medium. Prepare a soft-brass plug, one end turned and threaded to screw into rear end of bolt; the other end, either squared or rounded, to be gripped by any suitable rotating member, preferably a bit brace or breast drill. With brass plug screwed into bolt and gripped by jaws of bit

brace or breast drill, rapidly rotate bolt, applying freely plain *kerosene oil* only, until extractor collar is entirely free. Clean, wash, and dry bolt.

(5) A special precaution should obtain to entirely remove all trace of the abrasive from the arm. All washing and cleansing operations should be performed with the barrel held in a vertical position.

b. Adjustment of trigger action.—Rifles having unsatisfactory trigger actions will be turned in to the ordnance officer for adjustment. Normally this adjustment will be made by the ordnance officer utilizing therefor ordnance facilities and personnel; but at any post, camp, or station not provided with suitable ordnance personnel it will be done by utilizing such personnel as may be available after having specially trained them for the purpose. Instructions for correcting faulty trigger actions will be found in Training Regulations prepared under the direction of the Chief of Ordnance for the use of ordnance personnel engaged on the maintenance of rifles. There are two distinct phases to the trigger action. The initial movement of the trigger to the rear transfers the contact of the trigger with the receiver from its bearings to the heel and takes up what is referred to as "slack." After the "slack" has been taken up, any further appreciable movement of the trigger to the rear, prior to the release of the firing pin, is referred to in the service as "creep."

Most of the faulty trigger actions are due to the amount and character of the "creep." The amount of "creep" should be as small as possible so that after the "slack" has been taken up, the firing pin will be released by continuing the trigger squeeze, as prescribed in paragraph 226, but without giving the impression that trigger has been pulled farther to the rear.

35. *Repairs.*—With the exception of the improvements enumerated in paragraph 34 and the replacement of parts that are supplied in the arm repair chest, no repairs or alterations to the rifle, except by the Ordnance Department, are authorized. The Ordnance Department is charged with issuing rifles with trigger weights greater than 3 pounds but not in excess of 5 pounds. All rifles having trigger weights which do not fall between these limits should be turned in to the Ordnance Department for correction.

Section VIII

TABULATED DATA

36. *Exterior ballistics.—a. Rapidity of fire.*—Twenty-three aimed shots have been fired in 1 minute with this rifle, used as a single-loader, and 25 shots in the same time, using magazine fire.

Firing from the hip without aim, 30 shots have been fired in 1 minute, using rifle as a single-loader, and 40 shots in 1 minute, using magazine fire.

b. Pressure.—The powder pressure in the chamber of this rifle is about 51,000 pounds per square inch.

c. Accuracy (as determined by firings to date).

Range, yards	Deviation		
	Mean vertical	Mean horizontal	Mean radius
	Inches	*Inches*	*Inches*
100	0.6	0.6	0.8
200	1.1	1.1	1.5
300	1.7	1.7	2.3
400	2.3	2.3	3.2
500	3.0	3.0	4.1
600	3.6	3.6	5.0
700	4.3	4.3	6.0
800	5.0	5.0	7.1
900	5.9	5.8	8.3
1,000	6.5	6.4	9.6

d. Penetration.

Material	Penetration						
	50 feet	100 yards	200 yards	400 yards	600 yards	800 yards	1,000 yards
	Inches	*Inches*	*Inches*	*Inches*	*Inches*	*Inches*	*Inches*
Low steel, ¼″ plate	(1)	(1)	(1)	(1)	0. 1	0. 0	0. 0
Low steel, ½″ plate	(1)	0. 26	0. 15	0. 0	0. 0	0. 0	0. 0
Trap rock, between 1″ boards			3. 2	3. 2	2. 6	2. 4	
Trap rock, in sack			3. 22	3. 56	2. 72	3. 2	
Loam, between 1″ boards			7. 0	14. 4	9. 4	7. 86	
Sand, between 1″ boards			4. 0	5. 8	8. 52	6. 0	
Sand (loose dry)	8. 0		8. 1		12. 3		
Coal (hard) between 1″ boards			5. 2	4. 8	5. 2	4. 0	
Brick (cement mortar)			2. 2	1. 56	1. 16		
Solid oak	28. 25		32. 05				
Oak, 1″ boards			26. 46	17. 96	12. 46	7. 6	
Pine, yellow, 1″ boards			25. 72	17. 8	13. 0	8. 4	
Pine, white, 1″ boards	59. 9	52. 8					

[1] Through.

e. Point blank danger space.

Firing position	Assumed height of gun above ground	Point blank danger space (inf. 68 inches)
(Battle sight, angle of departure 0° 18′)		
Standing	56 inches	195 yards.
Kneeling	30 inches	640 yards.
Lying down	12 inches	590 yards.
(Barrel horizontal)		
Standing	56 inches	425 yards.
Kneeling	30 inches	325 yards.
Prone	12 inches	210 yards.

H–1–0. 30–2. A. P. G. December, 1922.

f. Ranges.—With the leaf up, ranges from 100 to 2,350 yards can be obtained through the peephole; from 100 to 2,450 yards through the lower notch at the bottom of field view; and from 1,400 to 2,750 yards through the upper notch in the upper edge of the drift slide.

The 2,850-yard range is obtained through the sighting notch in the upper end of the leaf.

With the leaf down and using the battle-sight notch in slide cap the sights are set for 547 yards or battle-line firing for the down position of the slide.

g. Maximum range (approximate)—

(Actual firing)

Maximum range	Elevation	Time of flight
3,450 yards.	30 degrees.	26 seconds.

37. *Table of fire for United States rifle, caliber .30, model of 1903 and 1906 ammunition—150-grain bullets.*

[Based on firings made at the Aberdeen Proving Ground in 1922, reduced to tabular conditions[1] and to MV=2,700 f/s]

Range	Angle of departure	Time of flight	Angle of fall	Remaining velocity	Summit of trajectory		Remaining energy
					Height	Distance from muzzle	
Yards	*Deg. Min.*	*Seconds*	*Deg. Min.*	*Ft. per sec.*	*Feet*	*Yards*	*Ft.-lbs.*
0	0 0	0.0	0 0	2,700	0.00	0	2,429
100	0 2	0.1	0 3	2,481	0.06	53	2,051
200	0 5	0.2	0 6	2,267	0.27	107	1,712
300	0 8	0.4	0 10	2,059	0.62	161	1,412
400	0 12	0.5	0 15	1,858	1.1	215	1,150
500	0 16	0.7	0 22	1,664	2.0	270	923
600	0 20	0.9	0 31	1,481	3.3	328	731
700	0 26	1.1	0 42	1,315	5.0	391	576
800	0 33	1.3	0 57	1,174	7.4	456	459
900	0 40	1.6	1 16	1,065	10.8	523	378
1,000	0 49	1.9	1 38	989	15.3	591	326

[1] Air density at battery, 59° F. and 29.53 inches of mercury.

H-1-0. 30-2. A. P. G. December, 1922.

38. *Horizontal deviation.*—The rifle has a right-hand twist, and the drift proper is therefore to the right. There is, however, a slight lateral jump to the left, and the total horizontal deviation of the bullet, excluding wind, is the aglebraic sum of the drift and the lateral jump. On account of this slight lateral jump, the trajectory is found to be very slightly to the left of the central or uncorrected line of sight up to a range of 500 yards, and beyond that range to the right of this line. In order to minimize the deviations at the most important ranges, the drift slot on the sight leaf is so cut as to make the trajectory cross the adjusted line of sight at a range of 500 yards. The deviations under these conditions are shown in column (4) of the table below. This drift and the deviations due to wind, given below, have been determined by experimental firings. The lines on either side of the peephole and lower notch enable the drift slide to be accurately set at any desired graduation on the leaf.

As the slide is moved up or down on the leaf the drift slide moves with it and at the same time has a lateral movement in the undercut between the branches of the leaf, thus automatically correcting for drift. This movement corrects for all drift up to 600 yards, but for only part of the drift beyond that range.

Range. (1)	Drift with targeted rifles, model of 1905 sights graduated for 1906 ammunition				
	Total drift. (2)		Drift corrected by sight leaf. (3)		Drift uncorrected (right) (4)
	Left	Right	Left	Right	
Yards	*Inches*	*Inches*	*Inches*	*Inches*	*Inches*
100	0.26	----------	0.26	----------	0.0
200	0.42	----------	0.42	----------	0.0
300	0.45	----------	0.45	----------	0.0
400	0.32	----------	0.32	----------	0.0
500	0.0	----------	0.0	----------	0.0
600	----------	0.55	----------	0.55	0.0
700	----------	2.0	----------	1.4	0.6
800	----------	4.5	----------	2.6	1.9
900	----------	8.2	----------	4.2	4.0
1,000	----------	13.0	----------	6.3	6.7

Weight of ball cartridge (model of 1906), about 395.5 grains.
Weight of bullet (model of 1906), 150 grains.
Weight of powder charge (model of 1906), about 50 grains.

Range	Correction on target caused by moving the eyepiece one point in deflection [1]	Correction on target corresponding to a change of 25 yards in elevation
Yards	*Inches*	*Inches*
100	4.3	0.7
200	8.7	1.5
300	13.0	2.5
400	17.4	3.9
500	21.7	5.7
600	26.1	8.1
700	30.4	11.1
800	34.8	15.0
900	39.1	19.8
1,000	43.4	25.6

[1] Based on data on page 71 of W. D. Document No. 987. Distance from top of front sight to rear side of leaf, leaf raised 22.1254 inches. Width of single division on windage scale 0.0267 inch.

H-1-0. 30-2. A. P. G. December, 1922.

39. *Principal dimensions, weights, and miscellaneous data.*—

a. Dimensions:

	Inches
(1) *Barrel:*	
Diameter of bore	0.30
Length of chamber	23.79
Length of travel of bullet in bore	21.697
(2) *Rifling:*	
Number of grooves, 4.	
Twist, uniform, one turn in	10.00
Height of front sight above axis of bore	1.05
Distance from top of front sight to rear of leaf, leaf raised	22.1254
(3) *Stock:*	
Length with butt plate	40.166
Crook, i. e., distance from axis of bore to heel of butt	2.089
Distance from trigger to butt plate	12.74
(4) Length of gun complete	43.212
(5) Sight radius	22.1254
(6) Sight radius (battle sight)	21.5404
(7) Width of single division on windage scale	.0267

b. Weights: Pounds

Total weight of arm, including oiler and thong case, with bayonet 9.69

Total weight of arm, including oiler and thong case, without bayonet 8.69

Trigger pull (measured at middle point of bow of trigger) 4¼ to 5½

c. Miscellaneous data:

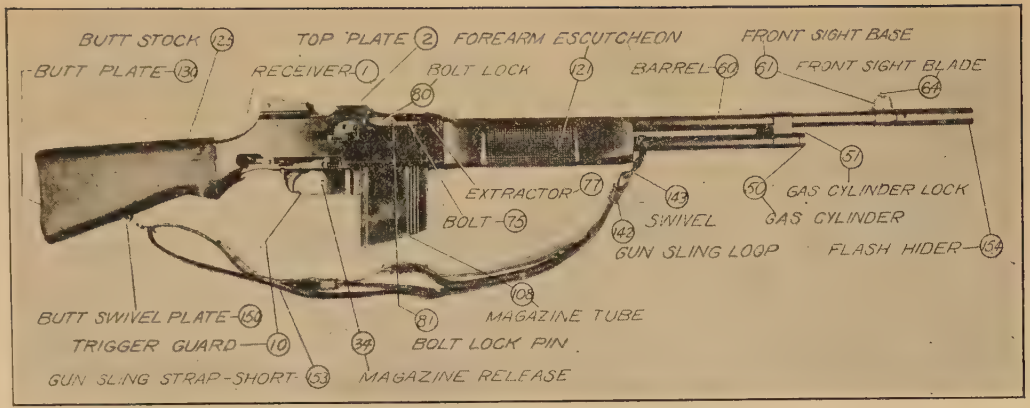
Initial velocity (theoretical), 2,700 feet per second.

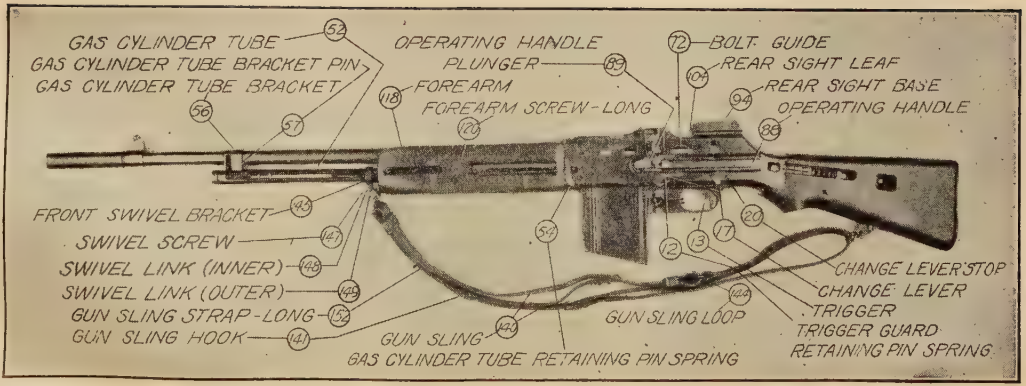
Powder pressure in chamber, about 51,000 pounds per square inch.

Weight of ball cartridge (model of 1906), about 395.5 grains.

Weight of bullet (model of 1906), 150 grains.

Weight of powder charge (model of 1906), about 50 grains.


BUTT STOCK 23
TOP PLATE 2
FOREARM ESCUTCHEON
FRONT SIGHT BASE
BUTT PLATE 130
RECEIVER 1
BOLT LOCK 21
BARREL 60
61
FRONT SIGHT BLADE
64
80
EXTRACTOR 77
43
51
50
GAS CYLINDER LOCK
BOLT 75
SWIVEL
GAS CYLINDER
42
GUN SLING LOOP
FLASH HIDER 154
105
MAGAZINE TUBE
BUTT SWIVEL PLATE 150
51
TRIGGER GUARD 10
34
BOLT LOCK PIN
GUN SLING STRAP-SHORT 53
MAGAZINE RELEASE


GAS CYLINDER TUBE 52
GAS CYLINDER TUBE BRACKET PIN
GAS CYLINDER TUBE BRACKET
56
57
OPERATING HANDLE
PLUNGER 83
118
FOREARM
FOREARM SCREW-LONG
120
72 BOLT GUIDE
104 REAR SIGHT LEAF
94 REAR SIGHT BASE
86 OPERATING HANDLE
FRONT SWIVEL BRACKET 43
SWIVEL SCREW 47
SWIVEL LINK (INNER) 48
SWIVEL LINK (OUTER) 49
GUN SLING STRAP-LONG 152
GUN SLING HOOK 141
54
12
13
17
20
CHANGE LEVER STOP
CHANGE LEVER
TRIGGER
TRIGGER GUARD RETAINING PIN SPRING
124
GUN SLING LOOP
142
GUN SLING
GAS CYLINDER TUBE RETAINING PIN SPRING

AUTOMATIC RIFLE (BROWNING), MODEL OF 1918

(T. R. 320–25)

		Paragraphs
SECTION I.	General description of rifle	40
II.	Field stripping and assembling	42
III.	Miscellaneous instruction	47
IV.	Functioning	52
V.	Stoppages	59
VI.	Care and cleaning	64
VII.	Detailed description of gun	68
VIII.	Stripping and assembling (not done in field)	69
IX.	Adjustment and inspection	74

SECTION I

GENERAL DESCRIPTION OF RIFLE

40. *General description.*—The Browning automatic rifle, model of 1918, is an air-cooled, gas-operated, magazine-fed, shoulder weapon. It has no special cooling system, the barrel being exposed to the air, and the hand of the firer being protected on the underside of the barrel by a large wooden forearm. Care must be taken to avoid touching the barrel during firing. The rifle is operated by the power furnished by expanding powder gases following ignition of the cartridge. These powder gases expand through a port in the barrel and act upon the head of a piston, driving it to the rear. During rearward movement the processes of unlocking, extraction, ejection, and compression of the recoil spring are effected; during the forward movement, feeding, locking, and igniting the cartridges are accomplished. The rifle is fed from a magazine having a capacity of 20 cartridges. This rifle can be fired effectively from all positions prescribed in Marksmanship for

the automatic rifle. It is capable of being fired at the rate of 150 rounds per minute, semiautomatic. The rate of fire, however, which gives the best results in the normal case is 40 to 60 shots per minute, semiautomatic.

41. *General data.*

Weight of rifle, 15 pounds 8 ounces.
Weight of magazine, empty, 7 ounces.
Weight of magazine, filled, 1 pound 7 ounces.
Length of barrel, 24 inches.
Over-all length, 47 inches.
Sights graduated to 1,600 yards.
Caliber bore, 0.30 inch.
Gas port from muzzle, 6 inches.
Rate of uninterrupted automatic fire (cyclic rate), 600 shots per minute.
Chamber pressure, 47,000 to 50,000 pounds per square inch.
Muzzle velocity, about 2,680 feet per second.
Habitual type of fire, semiautomatic.
Head space limits, 1.937 inches to 1.943 inches.
Length of recoil spring, 15.5 inches.

Power developed in the automatic rifle.—An automatic rifle of the Browning type has approximately ½ pound of weight per horsepower developed, as compared to approximately 8 and 3 pounds, respectively, for the best automobile engine and the Liberty motor. The relatively greater amount of work required of the weapon would necessarily indicate the necessity for careful care and manipulation of this type of gun. The following points should be carefully followed and adhered to in order to insure the continued successful mechanical operation of the Browning automatic rifle or any other similar type of automatic weapon.

Section II

FIELD STRIPPING AND ASSEMBLING

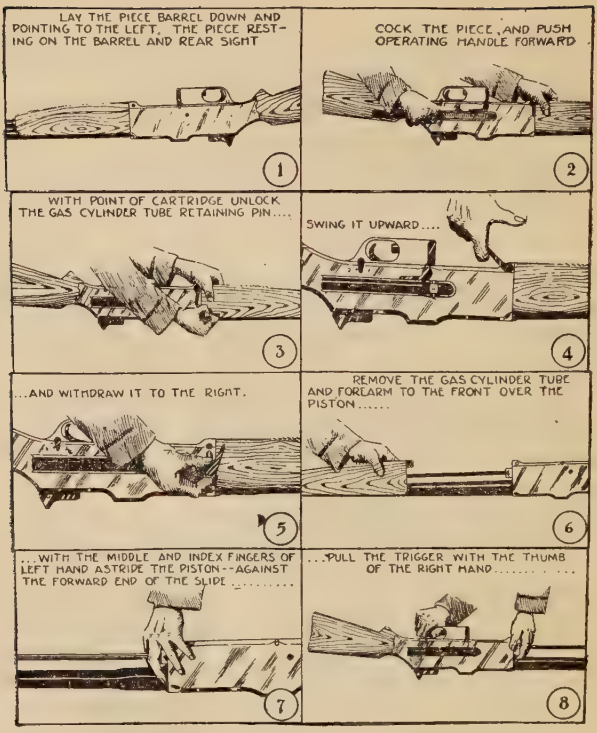
42. *Sequence and method of stripping.*—Steps in stripping will be taken in the following sequence:

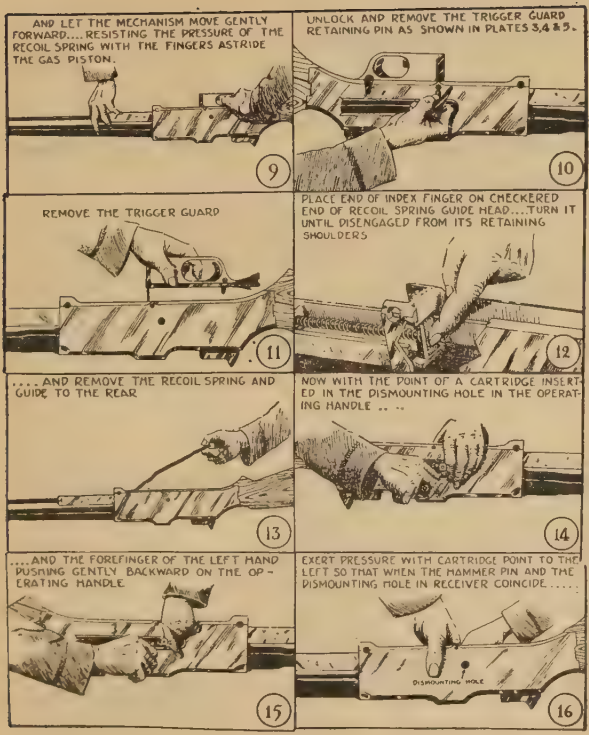
a. Cock the piece.
b. Remove gas cylinder tube retaining pin.
c. Remove gas cylinder tube and forearm (let mechanism forward easily).
d. Remove the trigger guard retaining pin.

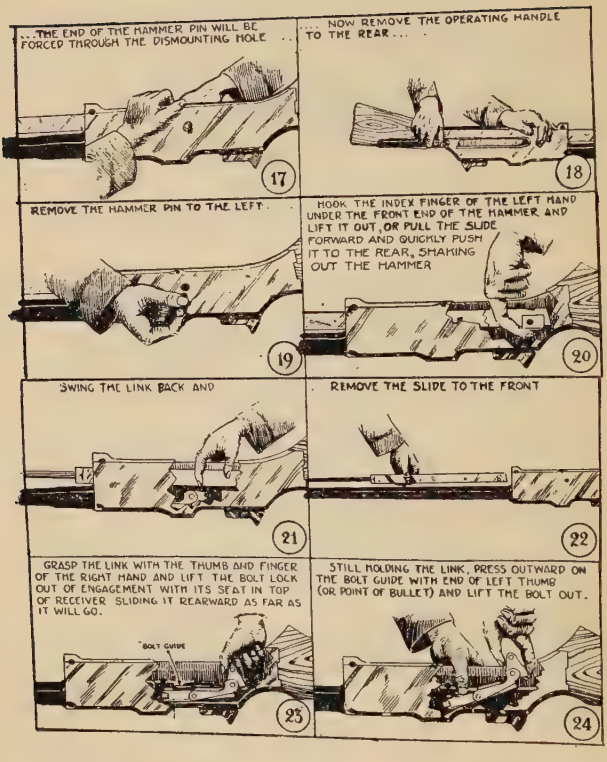
e. Remove trigger guard.
f. Remove recoil spring guide and recoil spring.
g. Push hammer pin through hammer pin hole in receiver.
h. Remove operating handle.
i. Remove hammer pin.
j. Remove hammer.
k. Remove slide.
l. Bolt guide pushed out.
m. Remove bolt, bolt lock, and bolt link.
n. Remove bolt link pin and bolt link.
o. Remove firing pin.
p. Remove extractor and spring.

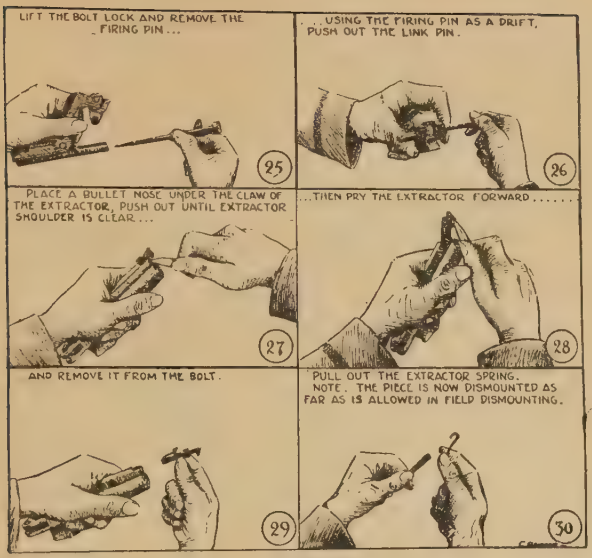
43. *Detailed explanation of stripping.*—Lay the rifle on the table, barrel down, pointing to the left. Cock the piece. This must be done in order that the gas cylinder tube may clear the gas piston and gas cylinder bracket, female. Turn the gas cylinder tube retaining pin spring (54) 90° in a clockwise direction and lift out gas cylinder tube retaining pin (53). Remove gas cylinder tube and forearm (118). Let the slide (45) forward very *easily* in order to release the tension of the recoil spring and avoid any damage to the rifle. Care must be taken during stripping and assembling to avoid working against tension of any springs. Turn the trigger guard retaining pin spring (12) 90° in a clockwise direction and lift out pin. Lift out the trigger guard group. Remove the recoil spring guide (41) by pressing the right index finger on the checkered surface of its head and turning it until the ends are clear of the retaining shoulders. This may also be done by using the index finger of the left hand and the middle finger of the right hand. Line up the hammer pin holes on the receiver and the operating handle by inserting the point of the recoil spring guide or dummy cartridge in the hole on the operating handle with the right hand, press against the hammer pin (86), and push the slide backward with the left hand. The recoil spring guide will push the hammer pin through its hole in the receiver as the hammer pin registers with the latter. Remove the operating handle (88) by pulling straight to the rear. Push the hammer (85) forward out of its seat in the slide (45) and lift out of the receiver. Remove the slide (45) by pulling forward out of the receiver, being careful that the bolt link (82) is pushed well down, thus allowing the slide to clear. In removing the slide take care to avoid striking

METHOD OF STRIPPING




AND LET THE MECHANISM MOVE GENTLY FORWARD.... RESISTING THE PRESSURE OF THE RECOIL SPRING WITH THE FINGERS ASTRIDE THE GAS PISTON.
9
UNLOCK AND REMOVE THE TRIGGER GUARD RETAINING PIN AS SHOWN IN PLATES 3,4 & 5.
10
REMOVE THE TRIGGER GUARD
11
PLACE END OF INDEX FINGER ON CHECKERED END OF RECOIL SPRING GUIDE HEAD....TURN IT UNTIL DISENGAGED FROM ITS RETAINING SHOULDERS
12
.....AND REMOVE THE RECOIL SPRING AND GUIDE TO THE REAR
13
NOW WITH THE POINT OF A CARTRIDGE INSERTED IN THE DISMOUNTING HOLE IN THE OPERATING HANDLE
14
....AND THE FOREFINGER OF THE LEFT HAND PUSHING GENTLY BACKWARD ON THE OPERATING HANDLE
15
EXERT PRESSURE WITH CARTRIDGE POINT TO THE LEFT SO THAT WHEN THE HAMMER PIN AND THE DISMOUNTING HOLE IN RECEIVER COINCIDE.....
DISMOUNTING HOLE
16


...THE END OF THE HAMMER PIN WILL BE FORCED THROUGH THE DISMOUNTING HOLE...
17
... NOW REMOVE THE OPERATING HANDLE TO THE REAR...
18
REMOVE THE HAMMER PIN TO THE LEFT.
19
HOOK THE INDEX FINGER OF THE LEFT HAND UNDER THE FRONT END OF THE HAMMER AND LIFT IT OUT, OR PULL THE SLIDE FORWARD AND QUICKLY PUSH IT TO THE REAR, SHAKING OUT THE HAMMER
20
SWING THE LINK BACK AND
21
REMOVE THE SLIDE TO THE FRONT
22
GRASP THE LINK WITH THE THUMB AND FINGER OF THE RIGHT HAND AND LIFT THE BOLT LOCK OUT OF ENGAGEMENT WITH ITS SEAT IN TOP OF RECEIVER SLIDING IT REARWARD AS FAR AS IT WILL GO.
BOLT GUIDE
23
STILL HOLDING THE LINK, PRESS OUTWARD ON THE BOLT GUIDE WITH END OF LEFT THUMB (OR POINT OF BULLET) AND LIFT THE BOLT OUT.
24



the gas piston or rings against the gas cylinder tube bracket, female (56). Force the bolt guide (72) out with the left thumb or point of bullet. Lift out the bolt, bolt lock, and bolt link by pulling slowly to rear end of receiver and up. Push out bolt link pin (83) and remove bolt link. Pull out the firing pin (76) from its way to in the bolt (75). Remove the extractor (77) by pressing the small end of a dummy cartridge against the claw and exerting pressure upward and to the front.

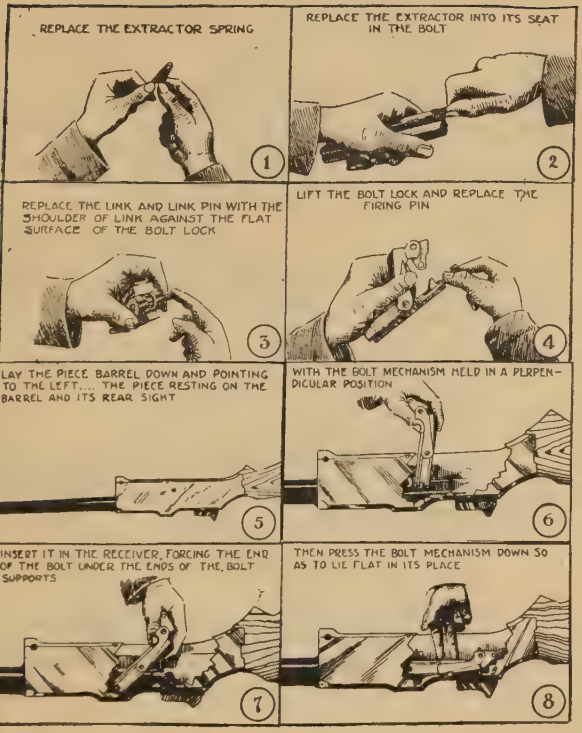
44. *Sequence and method of assembling.*

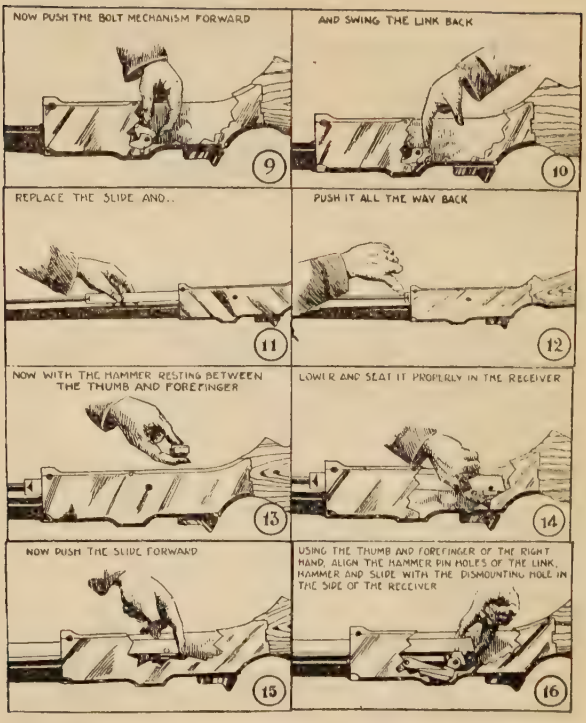
a. Extractor and spring.
b. Firing pin.
c. Bolt link and bolt link pin.
d. Bolt, bolt lock, and bolt link.
e. Slide.
f. Hammer.

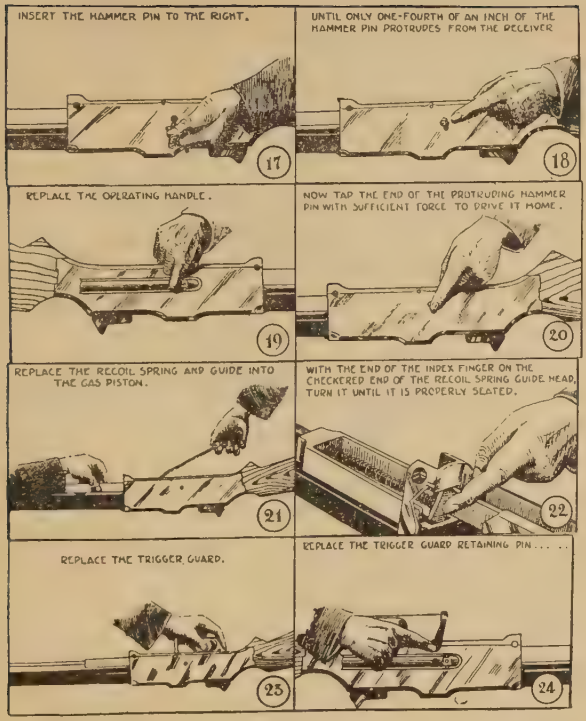
g. Hammer pin (far enough to register all holes).
h. Operating handle.
i. Hammer pin fully seated.
j. Recoil spring and guide.
k. Trigger guard.
l. Trigger guard retaining pin.
m. Cock the piece.
n. Gas cylinder tube.
o. Gas cylinder tube retaining pin.
p. Let slide forward easily.

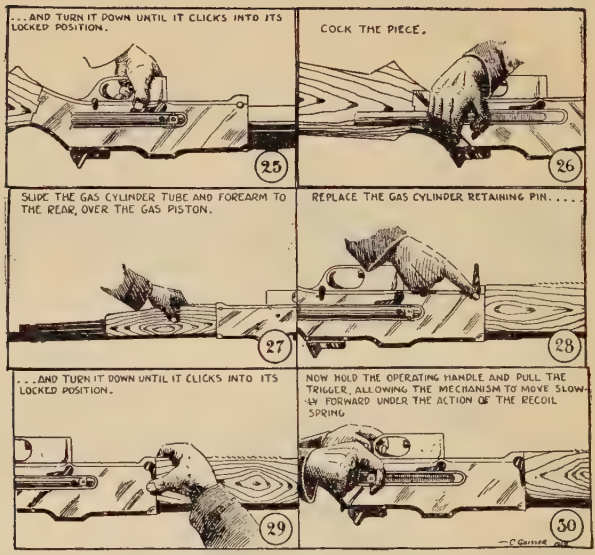
45. *Detailed explanation of assembling.*—Replace extractor spring (78). Replace extractor (77) into its seat in the bolt. Place the bolt link (82) and bolt link pin (83) with the shoulder of the link against the flat surface of the bolt lock (80). Lift the bolt lock and replace the firing pin (76). Lay the piece barrel down and pointing to the left so that the piece in resting on the barrel and rear sight. With the bolt mechanism held in a perpendicular position, insert it in the receiver, forcing the end of the bolt under the ends of the bolt supports, and then press the bolt mechanism down so as to lie flat in its place. Push the bolt mechanism forward, swing the bolt link down, then replace the slide (45) and push it all the way back. With the hammer (85) resting between the thumb and the forefinger, lower and seat it properly in the receiver and push the slide forward. With the thumb and forefinger of the right hand, align the hammer pin holes of the bolt link, hammer, and slide with the hammer pin hole in the side of the receiver. Insert hammer pin (86) to the right until only ¼ inch of the hammer pin protrudes from the receiver. Replace the operating handle (88). Tap the end of the protruding hammer pin with sufficient force to drive it home. Replace recoil spring (40) and guide (41). With the end of the index finger on the checkered end of the recoil spring guide head, turn it until it is properly seated. Replace the trigger guard and trigger guard retaining pin (11). Cock the piece. Slide the gas cylinder tube and forearm (118) to the rear of the gas piston. Replace gas cylinder tube retaining pin (53). Test the piece.

METHOD OF ASSEMBLING




NOW PUSH THE BOLT MECHANISM FORWARD
9
AND SWING THE LINK BACK
10
REPLACE THE SLIDE AND..
11
PUSH IT ALL THE WAY BACK
12
NOW WITH THE HAMMER RESTING BETWEEN THE THUMB AND FOREFINGER
13
LOWER AND SEAT IT PROPERLY IN THE RECEIVER
14
NOW PUSH THE SLIDE FORWARD
15
USING THE THUMB AND FOREFINGER OF THE RIGHT HAND, ALIGN THE HAMMER PIN HOLES OF THE LINK, HAMMER AND SLIDE WITH THE DISMOUNTING HOLE IN THE SIDE OF THE RECEIVER
16


INSERT THE HAMMER PIN TO THE RIGHT.
17
UNTIL ONLY ONE-FOURTH OF AN INCH OF THE HAMMER PIN PROTRUDES FROM THE RECEIVER
18
REPLACE THE OPERATING HANDLE.
19
NOW TAP THE END OF THE PROTRUDING HAMMER PIN WITH SUFFICIENT FORCE TO DRIVE IT HOME.
20
REPLACE THE RECOIL SPRING AND GUIDE INTO THE GAS PISTON.
21
WITH THE END OF THE INDEX FINGER ON THE CHECKERED END OF THE RECOIL SPRING GUIDE HEAD, TURN IT UNTIL IT IS PROPERLY SEATED.
22
REPLACE THE TRIGGER GUARD.
23
REPLACE THE TRIGGER GUARD RETAINING PIN. . . .
24



46. *Stripping and assembling trigger mechanism.—a. Sequence of stripping.*

(1) Ejector.
(2) Magazine catch spring.
(3) Magazine catch pin.
(4) Magazine catch.
(5) Magazine release.
(6) Sear spring.
(7) Trigger pin.
(8) Trigger and connector.
(9) Sear pin.
(10) Sear.
(11) Sear carrier and counterrecoil spring.
(12) Change lever spring.
(13) Change lever.

b. Detailed stripping.—Depress the ejector lock (30) with the point of a dummy cartridge. Hold the thumb in front of the magazine catch spring (33) to prevent it flying out and slide the ejector (29) out of its seat. (See pl. 4.) Remove the magazine catch spring. Remove the magazine catch pin (35) and then the magazine catch (32) (see pl. 5) and magazine release (34) may be lifted out. (See pl. 6.)

To remove the sear spring (26), insert the trigger guard retaining pin spring (12) under the sear spring (26) above the connector stop (27). Pry up, pressing against sear spring with thumb and pulling it out to the rear. (See pl. 7.) Push out the trigger pin (14) (see pl. 8) and then the trigger (13) and connector (16) can be removed through top of trigger guard. (See pl. 9.) Push out sear pin (24) with recoil spring guide (41). Remove sear (23). (See pl. 10.) Pry up on sear carrier (25) (see pl. 11) and lift out. Remove the change lever spring (18) by prying the bent end out of its seat with the rounded end of the sear spring and moving the change lever from front to rear. When clear of the change lever, push it out the rest of the way by pressing with the thumb against the sear stop.

Pull out the change lever.

c. Detailed assembling.—Assembling is in reverse order of the stripping. The following points should be observed in assembling:

(1) It is easy to seat the magazine catch spring (33) if the ejector (29) is moved down until it is flush with the magazine catch spring before attempting to compress the latter. (See pl. 12.)

(2) In assembling the change lever spring (18), first insert the ears in the slots in the trigger guard and push spring forward a slight distance, then insert the rounded end of the sear spring (26) between the rear end of the trigger guard and the change lever spring. By prying up with the sear spring and at the same time pressing forward against the sear stop (19) and rotating the change lever (17) from rear to front the change lever spring is easily seated. Assemble sear carrier (25) and counterrecoil spring (28) to trigger mechanism by inserting the counterrecoil spring guide (front of sear carrier) in the seat. Then, using the recoil spring guide as a lever in the sear pin hole, pry the sear carrier forward until its rear end is held by the ears of the change lever spring. Insert the sear (23) and force the recoil spring guide through, so as to

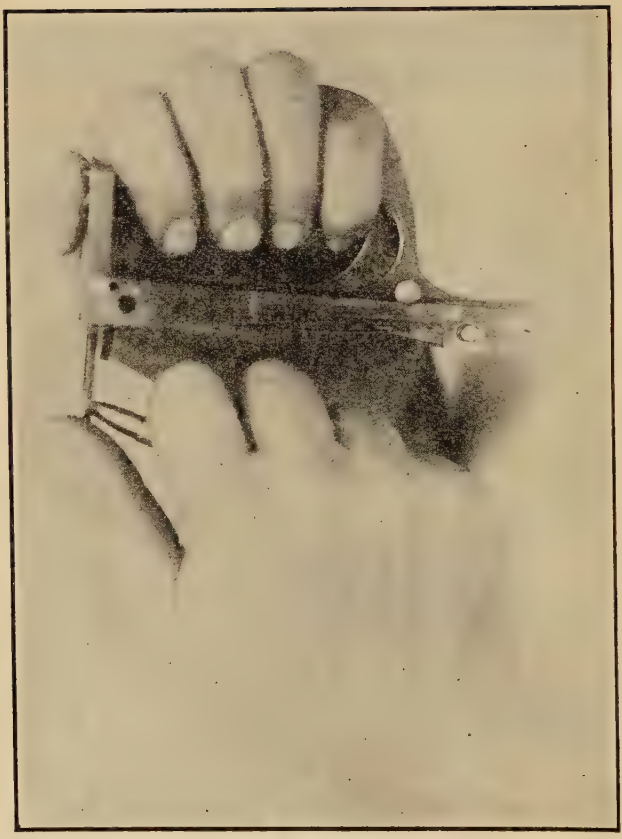


PLATE 4



PLATE 5

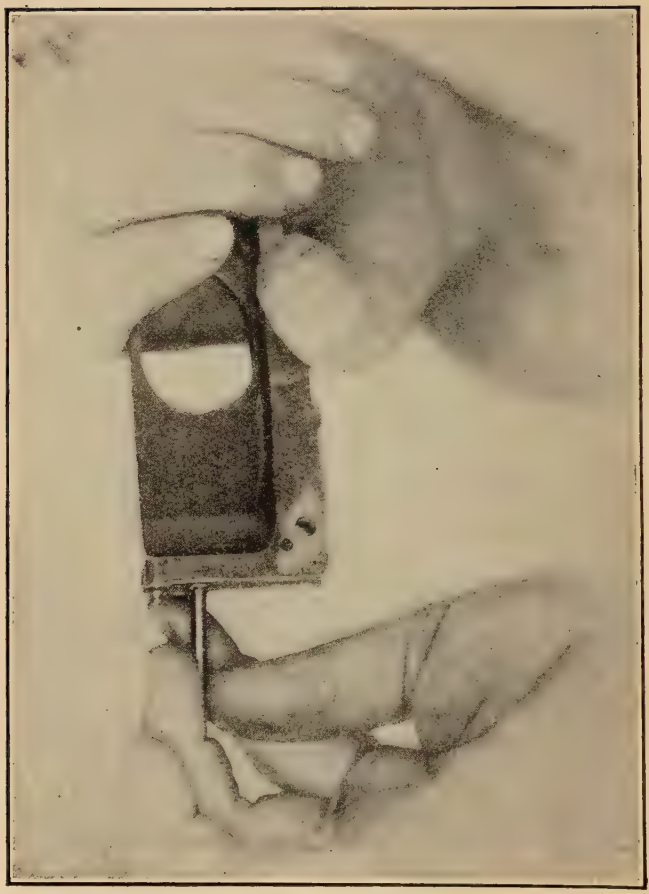


PLATE 6

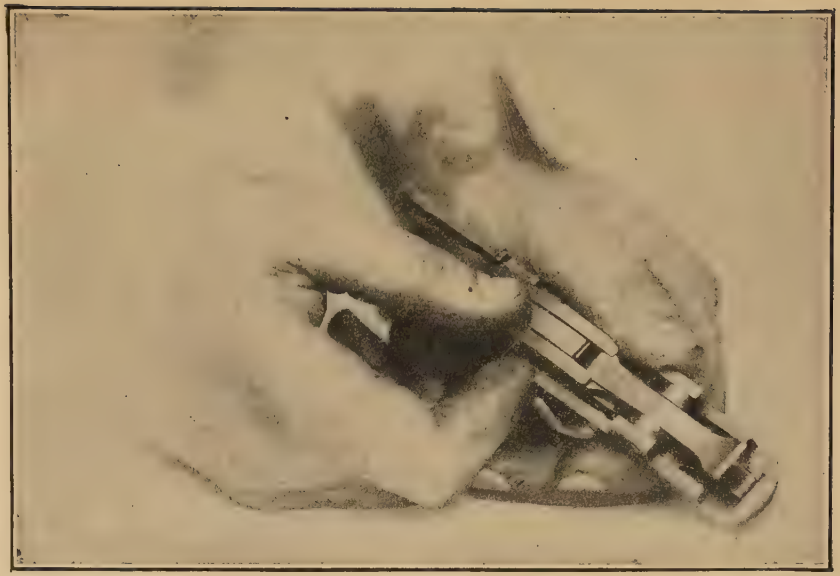


PLATE 7

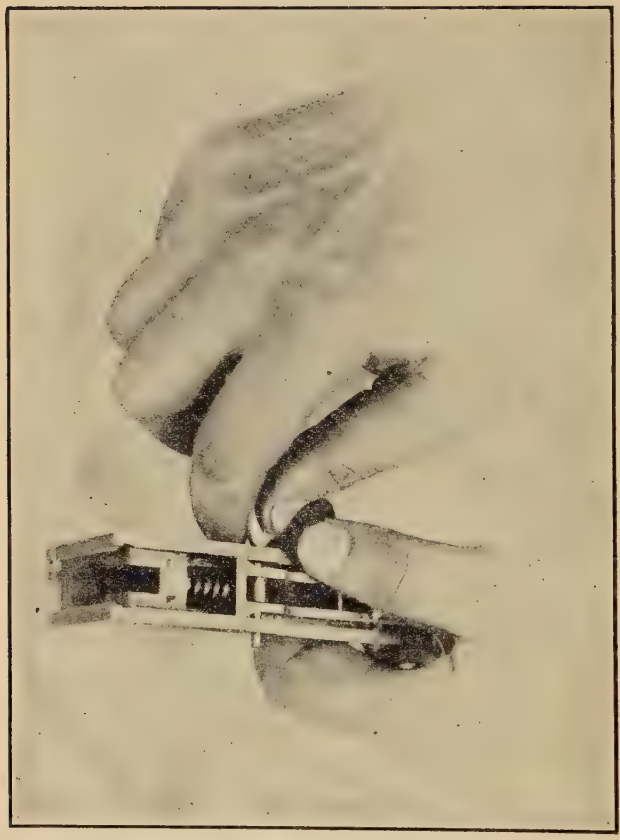


PLATE 8

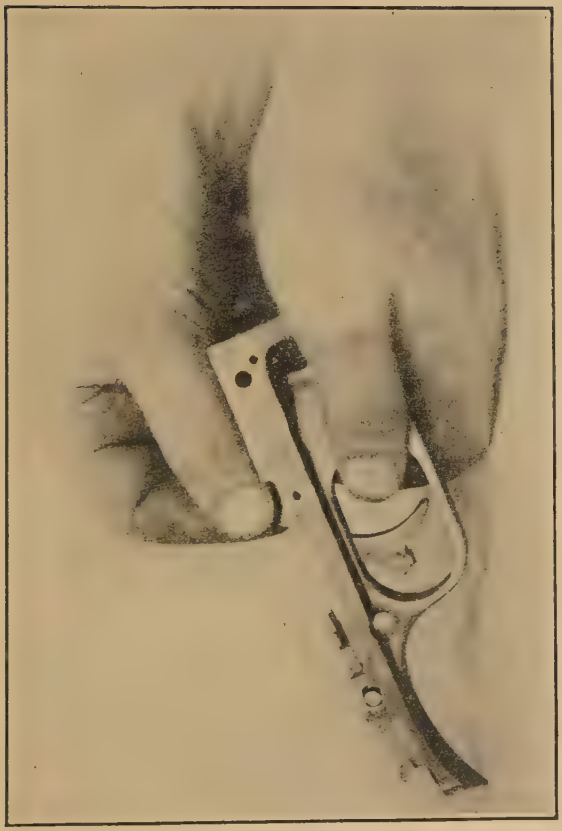


PLATE 9

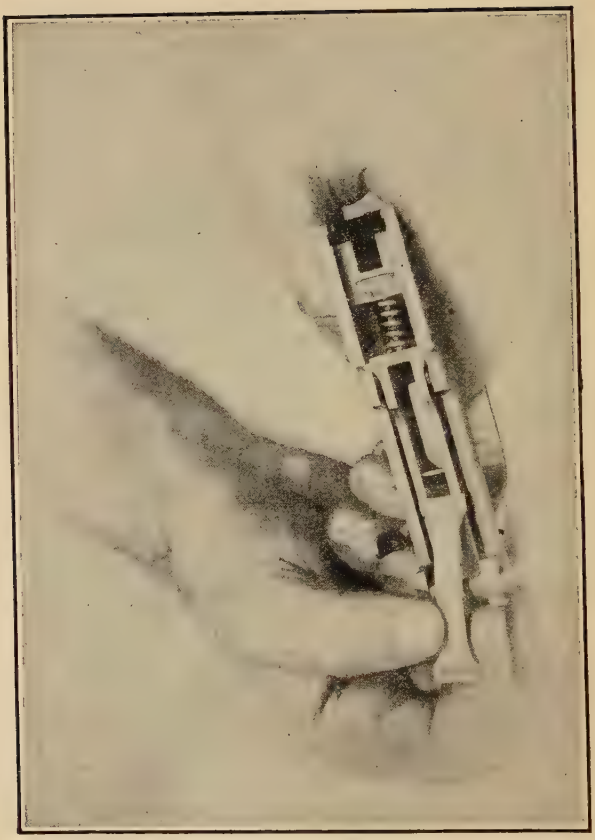


PLATE 10

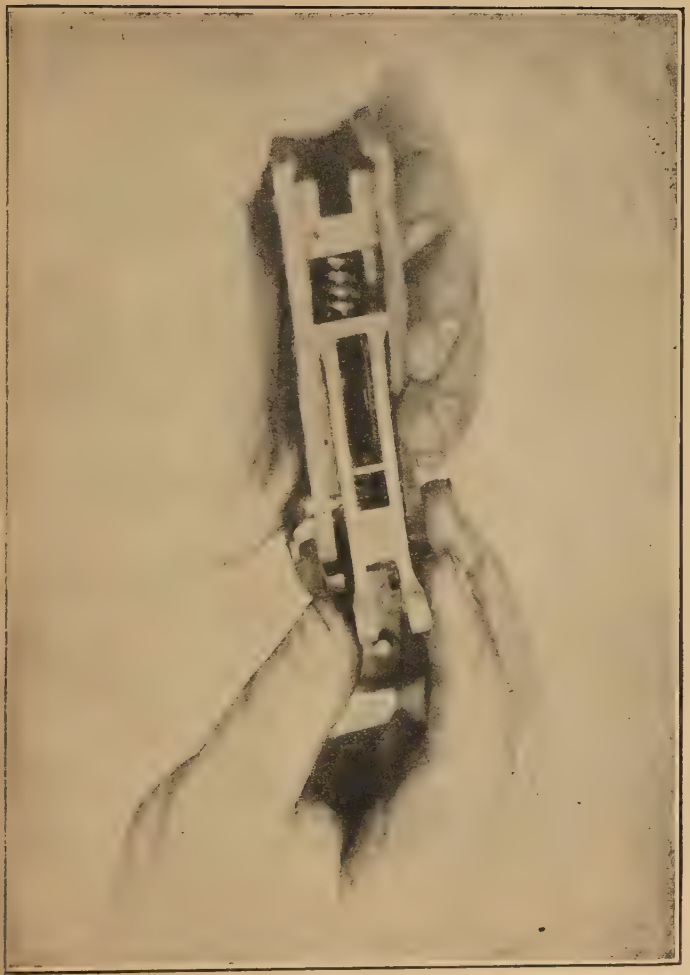


PLATE 11



PLATE 12

register the holes in the sear, sear carrier (25), and trigger guard for the sear pin. By a slight pressure on the recoil spring guide push the sear carrier forward against the counterrecoil spring, thus permitting the sear pin (24) to be easily seated in the sear pin hole. The trigger pin (14) must always be removed before the sear pin and the sear pin replaced before the trigger pin, in order that the tension of the counterrecoil spring will always be on the sear pin.

(3) In assembling the connector (16), note that its head is in rear of the connector stop (27) (see pl. 13) and the toe of the connector is down and to the rear. The connector will ordinarily drop into place resting on the connector pin in the trigger.

(4) To replace sear spring, press down and forward with the thumb of the right hand, engaging slides of the spring, in the recesses, until front end of spring rests in depression stop. Be especially careful to see that the outside prongs of the sear spring (26) rest on their seat on the sear, and that the middle prong rides freely in the slot formed by the walls of the sear carrier. If the middle prong rests on one of the walls, instead of riding freely between them, the trigger mechanism will not function when the barrel is inclined below the horizontal.

(5) After the trigger mechanism has been assembled, turn the change lever to the forward position and pull the trigger. If the connector will not rise, it is not in place correctly. It should rise and snap out from under the sear. If the connector will rise but does not raise the sear, the sear spring is weak and should be replaced.

Section III

MISCELLANEOUS INSTRUCTION

47. *Sequence of stripping and assembling.—a.* (1) To remove magazine base (109), raise the rear end until indentations thereon are clear, then slide to the rear. The magazine follower (110) and spring (111) will then fall out.

(2) It is assembled in reverse order. Note that the bent end of the follower and the eye of the spring work against the inside of rear (notched) end of magazine. (See pls. 15, 16, 17, and 18.)



PLATE 13



PLATE 14



PLATE 15

With point of a cartridge raise rear end of magazine base until indentations are clear to permit withdrawal. Then slide the base to the rear.



PLATE 16

Pull out magazine spring and shake out the follower. For assembling, insert follower and magazine spring.



PLATE 17

Compress magazine spring into position.



PLATE 18

With the left hand hold the magazine spring in position. Slide the magazine base fully home.

b. The magazine requires the same care as the rifle. It should not be allowed to become dirty. Dented magazines cause malfunctions. The greatest possible care should be taken to prevent any damage to the lips of the magazine or to the notch for the magazine catch.

48. *Method of operating magazine.—a.* To fill the magazine, place the wide end of the magazine filler over the top of the magazine so that the groove in the magazine filler fits over the catch rib of the magazine. Hold the magazine in the same relative position that it occupies in the rifle; that is, with the catch rib toward the operator. Then insert a clip of cartridges in the guides provided in the filler, and with the right thumb near the base, strip the cartridges into the magazine. Each magazine will hold four clips. (See pl. 19.)

b. To insert the magazine, withdraw the empty magazine after pressing the magazine release. Hold the magazine (loaded) with the base in the palm of the right hand, cartridges pointing to the front. Insert the magazine between the sides of the receiver in front of the trigger guard, and push it home with the right hand. The magazine can be inserted with the mechanism in either the cocked or forward position. It is, however, ordinarily inserted after the rifle has been cocked.

c. The change lever controls the rate of fire.

(1) For semiautomatic fire, or single shot, push the change lever to the forward position, marked "F."

(2) For full automatic fire or continuous fire to the capacity of the magazine, set the change lever in the vertical position against the change-lever stop, marked "A."

(3) To set the rifle at safe, depress the change-lever stop and pull the change lever rearward until it covers the change-lever stop. This position is marked "S." It will be noticed that the change stop prevents the accidental setting of the change lever at safe and at the same time allows a quick change from safe to either full automatic or semiautomatic fire.

49. *Spare parts and accessories.—a.* In the kit are the remedies for all temporary stoppages. Without it the gun is liable to be out of action indefinitely; with it the gun can be back in action in a few seconds.

The importance of knowing what is, and what is not, carried as a spare part should be impressed on all automatic riflemen. It is essential to know where to find any spare part that may be required. All spare parts must be given their proper names; the use of other names is forbidden. A list of

deficiencies should be kept inside each gun box. Spare parts must be kept lightly oiled. Breakages and losses must be re-

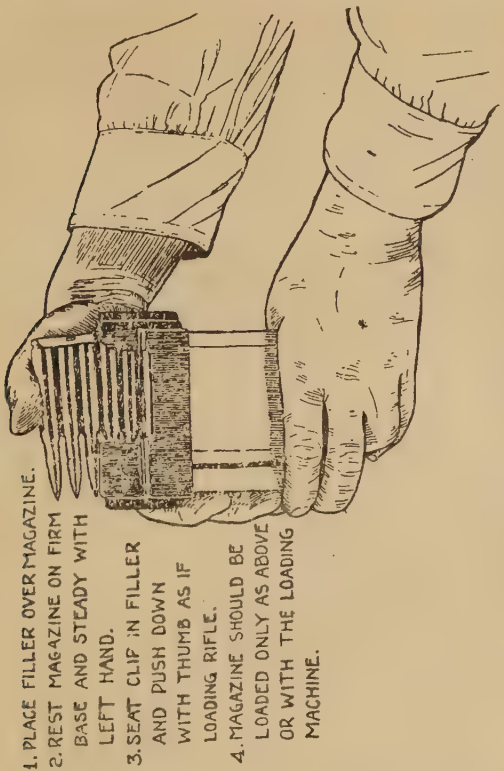


PLATE 19.—Loading magazine for automatic rifle

ported immediately. Worn or defective parts should not be kept in the spare-parts box. Where any rifles are kept in reserve, care should be taken to see that they are in the same

condition of readiness for action as those to be used in the firing line. They should not be utilized as a source for obtaining spare parts.

b. (1) *Spare-parts case and fabric container.*—The spare-parts case should be given the same care as other leather equipment. The contents should always be properly packed. The small fabric container is used to hold the recoil spring after it has been coiled up. The remaining spare parts are packed in the large fabric container.

(2) *Oil can and thong cleaner.*—Care should be taken to avoid denting or otherwise damaging the oil can. The nozzle should be kept screwed down firmly. The thong cleaner is identical with that for the service rifle, and should be used in the same manner.

(3) *Ruptured cartridge extractor Mark II.*—When a cartridge ruptures, it leaves the front end in the chamber, which telescopes over the bullet end of the next cartridge. As the operating handle is pulled back the live cartridge is extracted and ejected, sometimes withdrawing the ruptured fragment with it. In this case the use of the ruptured cartridge extractor is unnecessary. If the ruptured end is not extracted by the following cartridge, cock the rifle and remove the magazine. Then insert the ruptured cartridge extractor through the ejection opening, and push it forward into the chamber. Let the bolt forward without excessive shock so that the extractor engages the rim of the ruptured cartridge extractor. Then draw the operating handle back, extracting and ejecting the ruptured cartridge extractor and ruptured fragment of the cartridge case. This fragment can sometimes be removed from the extractor by depressing the front catches of the sleeve, but it will usually be necessary to unscrew and remove the spindle and sleeve from the head of the ruptured cartridge extractor. Two, and sometimes more, ruptures can be extracted before it is necessary to remove the fragments from the extractor sleeve.

Every precaution should be taken to avoid the loss of this very important tool. In case it does become lost, it will sometimes be possible to remove a ruptured cartridge case by the use of a cartridge which has been oiled or moistened and coated lightly at the front end with sand or dirt. Although the rifleman should know of this method, its use should be prohibited except in cases of urgent necessity, as the residue of grit may result in the scoring of the polished surface of the chamber.

(4) *Combination tool.*—The small spanner at the head of the combination tool is used to turn the gas cylinder or the flash hider. Barrels which are not excessively tight in the receiver can be removed and replaced by the use of the larger spanner, although shop facilities are necessary for the proper accomplishment of this work.

On tools of the latest design the catch end of this large spanner is drawn out to provide a thin screw-driver end, used for the removal of the smaller screws on the rifle, such as the butt-plate screws, the swivel screws, and the rear-sight screws. The position of this screw driver allows the use of a large amount of leverage. Extreme care should therefore be exercised to avoid the breakage of the screw-driver point. The regular screw-driver end is heavily made and may be used for the removal of the butt-stock bolt and the forearm screws.

(5) *Gas cylinder tool.*—This tool is provided for the cleaning of the gas-operating mechanism. These parts should habitually be kept clean and oiled. For thorough cleaning remove the gas-cylinder tube, gas cylinder, and slide. Care should be exercised to avoid scoring or damaging the cylinder walls or the rings of the gas piston. Using the tool as a hand reamer, insert the smooth end of the body into the cylinder, turning it to the right as it is advanced toward the cylinder head. As soon as it reaches the head, press down and give the tool a few turns to cut the carbon from the inside surface of the head. Then withdraw and reverse the tool, using the recess cutter as a gauge to remove the carbon from the recess at the forward end of the interior of the gas cylinder. This part should be thoroughly cleaned, especially that portion near the edge of the operating surface of the cylinder wall. Using the drift point, clean the ports in the barrel, gas-cylinder tube and gas cylinder. Scrape the carbon from the face of the piston with the front cutting edge of the cleaning-tool body, and remove the deposit from between the piston rings with the drift point. The parts should then be washed in kerosene if this is available.

(6) *Luminuous sights, Mark III.*—The luminuous sights are made of light spring steel, the sighting portions carrying glass tubes in which a radium-luminuous powder is sealed. These sights are delicate attachments and should be handled as such. Special attention should be given to keeping the luminous surface of the glass tubes clean. The steel portions should be kept lightly oiled to prevent rust. The luminous sights may be quickly attached to the permanent sights on the rifle. Their specific use is for night firing.

To attach the sights, snap the luminous front sight over the front-sight base, allowing the luminous front-sight body to automatically position itself over the front-sight blade. Care should be taken to insure that the circular sections of the luminous front-sight spring properly around the front-sight base. Attach the rear luminous sight to the rear-sight slide by hooking the upper spring under the upper crosspiece of the rear-sight slide and pressing with thumb on the lower protecting shelf of the luminous rear sight, thereby compressing the spring and allowing the lower catch to engage over the peep sight of the rear-sight slide. The luminous rear sight is then in position and the peephole is registered with the peephole of the rear-sight slide.

To detach the luminous sights, lift the luminous front sight upward off the front-sight base. Remove the luminous rear sight by pressing upward on the lower shelf until the lower catch is released.

(7) *Attachments, blank ammunition, for Browning automatic rifle.*—Blank ammunition attachments for functioning the automatic rifle are being developed in order to use the automatic rifle in maneuvers and for such purposes, as the gun will be used to stimulate service firing. The blank ammunition attachments are adapted to fire model of 1909, blank ammunition. The blank ammunition, model of 1909, is slightly modified by crimping the end of the shell case slightly to facilitate the feeding in the magazine. The same ammunition is used with the Browning machine gun, model of 1917. This type of ammunition supersedes the old type, model of 1909 ammunition, and is being manufactured exclusively, inasmuch as it will function in service rifles, machine guns, and automatic rifles. The type that will probably be adopted consists of:

(*a*) 1. Muzzle piece.
2. Gas cylinder tube retaining pin and safety (assembled).
(*a*) Gas cylinder tube retaining pin.
(*b*) Gas cylinder tube retaining pin key.
(*c*) Gas cylinder tube retaining pin safety.
3. Magazine (blank ammunition).
(*a*) Magazine tube (standard altered).
(*b*) Magazine follower (standard altered).
(*c*) Cartridge guide (new).
(*d*) Magazine spring (same as standard).
(*e*) Magazine base (same as standard).

(*b*) *Muzzle piece.*—The muzzle piece is a cylindrical bar about 2 inches long with a raised annular ring around the center shaped like a top; one end is tapped and threaded to fit the Browning automatic rifle barrel. The inside of the tapped end is conical shape, through which is drilled a small hole. A wrench slot is also provided similar to the flash hider for assembling and disassembling. The muzzle piece resembles the flash hider in that the flash hider is removed and the muzzle piece is screwed on the barrel in its place. The peculiar top-like shape is made in order to readily distinguish the muzzle piece, so that it will not be left on the gun by mistake. The conical shape allows the gases from the explosion to be trapped and to burn the wad from the cartridge case.

(*c*) *Gas cylinder tube retaining pin and safety assembly.*—The gas cylinder tube retaining pin and safety assembly is very similar in operation to the gas cylinder tube retaining pin used with the automatic rifle. An additional arm is provided as a safety. When the gas cylinder tube retaining pin and safety is assembled to the gun the safety arm extends into the magazine space of the rifle. The pointed nose of the safety is then in such a position that the blank ammunition magazine only can be fed into the gun.

(*d*) *Magazine* (*blank ammunition*).—The magazine for firing blank ammunition operates principally the same as the standard magazine. The loading tool provided with the Browning magazine will serve to load the blank ammunition from clips into the blank-ammunition magazine. The blank-ammunition magazine is made up by altering the standard Browning magazine and inserting the cartridge guide to guide the blank cartridge from the magazine and to block out service ammunition from the magazine. A V-slot is made in the left side of the magazine to allow clearance for the safety on the gas cylinder tube retaining pin. This gives additional safety by blocking out the service magazine, which would otherwise make it possible to load service ammunition into the gun. The standard service magazine follower is used with the changes noted. The magazine spring and base are the same as are used in the service magazine. The insertion of the magazine requires the least bit of training, as the lower part of the magazine must be tipped slightly to the left side of the gun to allow the safety to enter the slot of the magazine. This is made necessary in order to reinforce the magazine at the top of the V-slot. This could be eliminated by extending the slot to the edge of the magazine; however, this would have left it too weak. Should the maga-

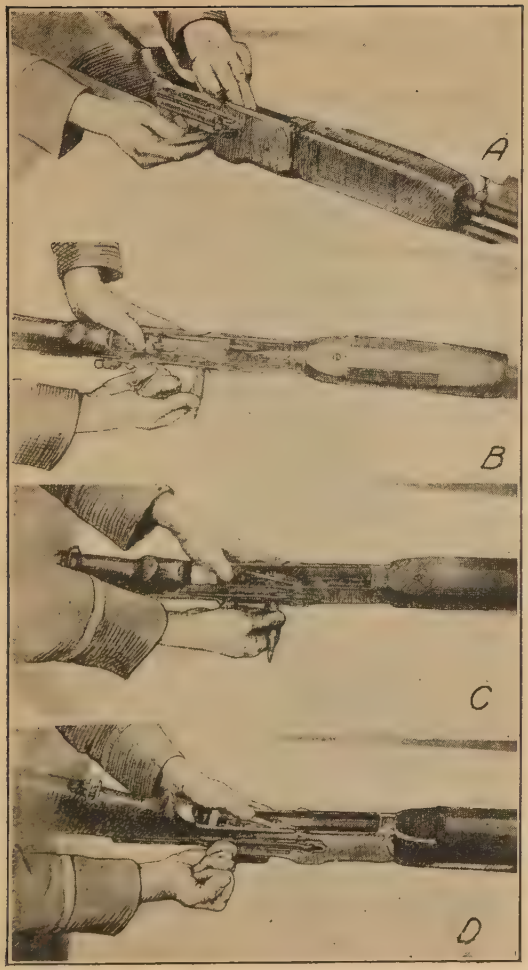
zine feed the cartridge too high to enter the chamber properly, a slight closing in of the lips of the magazine or a forcing down of the cartridge guide slightly will eliminate this malfunction.

(*e*) The following instructions will be strictly adhered to: Before inserting the blank ammunition in the automatic rifle first observe the cartridge to make sure that it is a blank cartridge. The space for the top cartridge will allow one service round of ammunition to be fed into the magazine. The service cartridges can be fed into the blank-ammunition magazine. However, when the bolt goes forward the two service cartridges bind against the cartridge guide, which prevents their feeding. When by accident a single round, top cartridge, is fed into the magazine *it will feed*, and every precaution must be taken to make sure the top cartridge in the magazine is a blank.

(*f*) All magazines loaded with blanks must be inspected before inserting in the gun. The safety on the gas cylinder tube retaining pin will block out the service magazine, thereby making it safe against loading service ammunition in the gun.

(*g*) With the Browning automatic rifle made ready for firing, remove the gas cylinder tube retaining pin, insert the gas cylinder tube retaining pin and safety assembly. Make sure the gun is not loaded, remove the flash hider, and screw the muzzle place in position with the combination tool. Load the magazine in the ordinary manner, except use blank ammunition, model of 1909. This will be packed in paper cartons marked "20 cal. .30 blank cartridges, model of 1909, for service rifles, models of 1903 and 1917, automatic rifle with muzzle attachment and machine gun with muzzle attachment." To remove the blank ammunition attachments, remove the muzzle piece first and the gas cylinder tube retaining pin and safety assembly last. The blank ammunition attachments and the rifle after firing should be thoroughly cleaned with pure water, then with soda solution if available, then dried thoroughly and oiled. Ammonia solution need not be used after firing blank ammunition, as there is no metal fouling to be removed. In case water or soda solution is not immediately available after firing, a thorough oiling of the parts will prevent corrosion until cleaning facilities are on hand.

50. *To remove firing pin without stripping.*—Lay the rifle on the table, barrel down, muzzle to the front. Remove trigger mechanism. Place rim of cartridge under bolt guide (pl. 21a). Pull operating handle to rear and hold mechanism back. Steady the cartridge with the thumb and forefinger of the right hand (pl. 21b). It may be necessary to exert a slight



PLATES 21a, 21b, 21d.—Removing firing pin without stripping the rifle



PLATE 22a



PLATE 22b

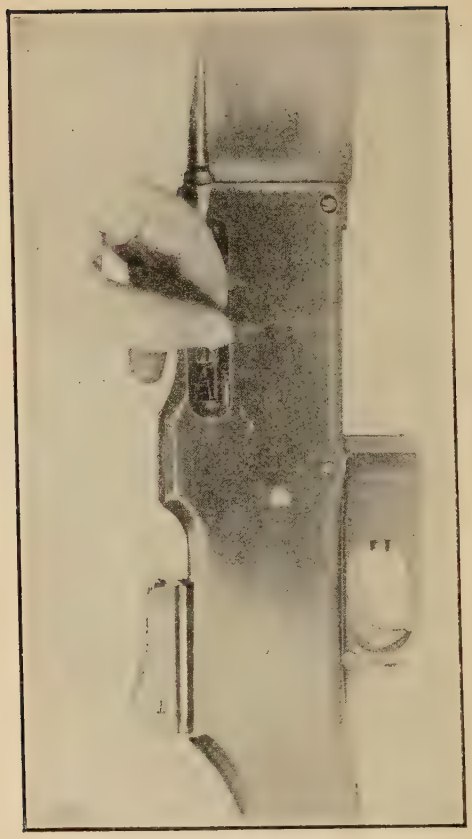


PLATE 22c

downward pressure on the nose of the cartridge in order to pull the bolt guide out far enough to free the bolt. Push down on bolt link, causing bolt to break at bolt lock pin (Pl. 21c). Allow mechanism to go forward until it stops. Replace firing pin. Then pull operating handle to rear again and push bolt into position (pl. 21d).

51. *To remove extractor without stripping.*—Draw back mechanism and insert empty cartridge case between bolt and chamber, exposing the extractor (pl. 22a). With the forefinger of the left hand, force out the claw of the extractor, then place point of cartridge behind the extractor shoulder and pry forward until extractor is free of recess (pl. 22b). Remove extractor spring.

To assemble extractor, insert short end of extractor spring in hole in the shank of extractor, having the long end of the spring along the slot in the extractor. Insert extractor and spring in end of bolt and push into position (pl. 22c).

Section IV

FUNCTIONING

52. *Explanation of functioning.*—All automatic weapons must have mechanical means for performing the following functions: Extraction, ejection, feeding, locking the breech while there is a high pressure in the bore, and igniting the cartridge.

Operations such as extraction and ejection are performed by various cams, lugs, and springs, and the energy necessary to perform this work and to overcome friction in the rifle is derived from the explosion of the powder in the chamber.

53. *Detailed functioning.*—*a.* The functioning of the Browning automatic rifle is divided into two phases based on the natural operations of the mechanism when a shot is fired. These two phases are the backward (first phase) and the forward action (second phase). In making the division the igniting of the cartridge in the chamber is the dividing point.

b. The operations which take place in the first phase of functioning are—

(1) Action of gas.
(2) Movement of slide to rear.
(3) Withdrawal of firing pin.
(4) Extraction.
(5) Ejection.
(6) Termination of first phase.

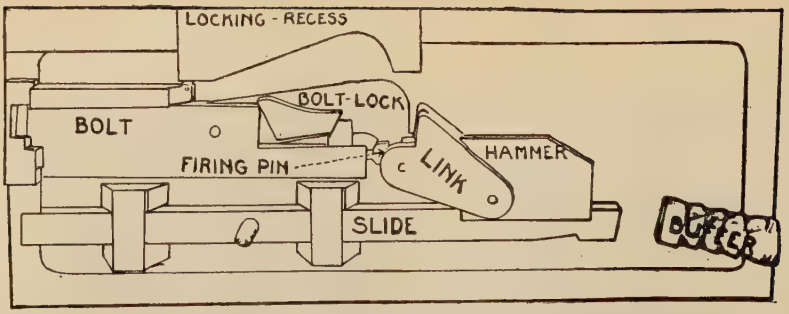


PLATE 23.—Bolt action, Browning automatic rifle, model of 1918

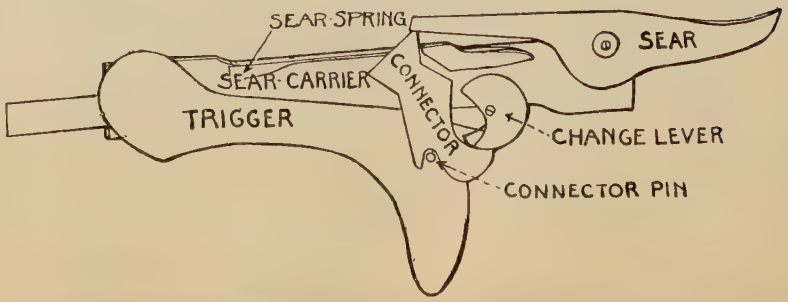


PLATE 24.—Trigger mechanism, Browning automatic rifle, model of 1918

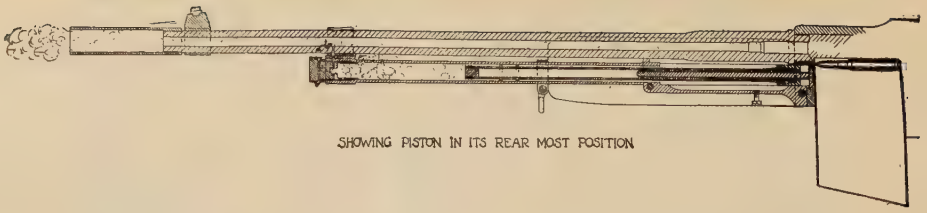
c. The operations which take place in the second phase of functioning are—

(1) Action of recoil spring.
(2) Feeding.
(3) Locking.
(4) Ignition.
(5) Termination of second phase.

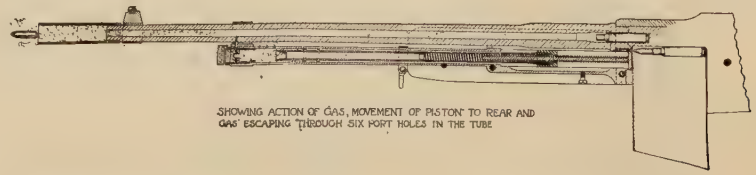
54. *First phase.—a. Action of gas.*—A cartridge having been ignited, the bullet under the pressure of the expanding powder gases travels through the barrel, and when it reaches a point 6 inches from the muzzle, it passes a port in the bottom of the barrel. The barrel pressure, which at this instant is still very high, seeks this first natural vent. Registered with the barrel port are other similar ports in the gas cylinder tube bracket, gas cylinder tube, and gas cylinder. The port in the gas cylinder is the smallest and serves to throttle the barrel pressure. The ports in the gas cylinder lead radially into a well about ⅛ inch in diameter in the head of the gas cylinder. The throttled barrel pressure is conducted through this well to the gas piston plug. This pressure acts on the piston a very short time, namely, the time it takes the bullet to travel the 6 inches distance from the barrel port to the muzzle. Its effect is that of a sudden severe blow on the piston plug. Under the influence of this blow the gas piston is driven to the rear and carries with it the slide to which it is assembled. When the piston has traveled about $\frac{5}{16}$ inch backward, the bearing rings on its head, also the gas piston plug, pass out of the cylinder. The gas expands around the piston head and into the gas cylinder tube, and is exhausted through 6 portholes in the tube, just in rear of the gas cylinder tube bracket. The gas is prevented in a large measure from traveling back through the gas cylinder tube by two rings on the piston, about ⅝ inch apart and 1¼ inches from the piston head. These rings also serve as bearings to hold the front end of the piston in the center of the gas cylinder tube after the piston head has passed out of the gas cylinder.

b. The slide.—As the piston is forced back as described above it carries with it the *slide.* The first and immediate result of the backward movement of the slide is the beginning of the compression of the recoil spring, thereby storing energy for the forward action.

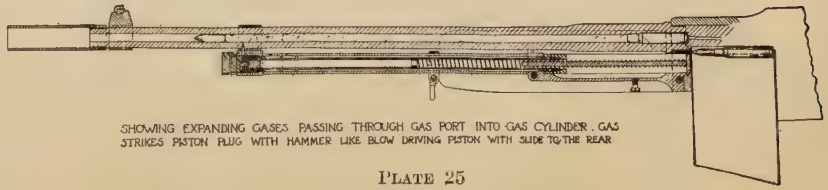
c. Unlocking.—The hammer pin is slightly in advance of the bolt link pin, about 0.19 of an inch. The center rib of the



SHOWING PISTON IN ITS REAR MOST POSITION



SHOWING ACTION OF GAS, MOVEMENT OF PISTON TO REAR AND GAS ESCAPING THROUGH SIX PORT HOLES IN THE TUBE



SHOWING EXPANDING GASES PASSING THROUGH GAS PORT INTO GAS CYLINDER. GAS STRIKES PISTON PLUG WITH HAMMER LIKE BLOW DRIVING PISTON WITH SLIDE TO THE REAR

PLATE 25

hammer is very slightly in rear of the head of the firing pin. When the slide begins its motion to the rear it imparts no motion whatever to the bolt and bolt lock. The slide moves back 0.19 of an inch, and its only effect during this travel is to carry the hammer from the firing pin and the hammer pin directly under the bolt link pin. At this point the unlocking begins, the bolt link revolves forward about the hammer pin, drawing the bolt lock down and to the rear. The motion of the lock and bolt, which is zero at the instant the hammer pin passes under the bolt link pin, accelerates from this point until the slide has traveled about 1.2 inches, at which point the bolt lock is drawn completely down out of the locking recess and away from the locking shoulder of the receiver. It is now supported in front on the bolt supports, and the front upper shoulder of the bolt link has revolved forward and bears upon the locking shoulder of the bolt lock. These two influences prevent the bolt lock from revolving down below the line of backward travel of the bolt.

d. Withdrawal of firing pin.—As the bolt lock revolves down from its locked position, a cam surface in a slot in the rear bottom side of the bolt lock comes in contact with a similar cam surface on the firing-pin lug, and cams the firing pin from the face of the bolt.

e. Extraction.—The backward motion of the bolt begins when the bolt lock has been drawn down so that the circular cam surface on its underside is operating on the rear shoulders of the bolt supporters. This produces a strong lever action which slowly loosens the cartridge case. The backward travel of the bolt has been slight, only about $\frac{5}{32}$ inch when the firing pin is withdrawn; its travel is about $\frac{1}{32}$ inch when the bolt lock is completely drawn down. From this point the bolt moves to the rear, drawn by the bolt lock and bolt link, with the same speed as the slide and carries with it the empty cartridge case, which is held firmly in its seat on the face of the bolt by the extractor. The extractor is on the upper right-hand side of the bolt next to the ejection opening in the receiver. A slot cut in the left side of the bolt lock near the back end passes over the bolt guide, which supports the bolt lock and bolt when they are in the rear position.

f. Ejection.—When the slide reaches a point about $\frac{1}{4}$ inch from the end of its travel, the base of the cartridge case strikes the ejector, which is on the left side of the feed rib of the bolt, and opposite the extractor. This action causes the car-

tridge case to be pivoted with considerable force about the extractor, and through the ejection opening in the receiver. The front end of the cartridge case passes first out of the receiver, and is pivoted so that it strikes the outside of the receiver at a point about 1 inch in rear of the ejection opening. It rebounds from the receiver toward the right front.

g. Termination of first phase.—The backward motion is terminated when the rear end of the slide strikes the buffer. The slide moves forward $\frac{1}{10}$ inch, after striking the buffer, under the action of the recoil spring, but if the sear nose is not depressed, it engages the sear notch on the slide, and the piece is cocked for the next shot.

NOTE.—It is to be noted that the motion of the bolt, bolt lock, and bolt link mechanism began slowly at first and did not attain the speed of the slide until the latter had traveled about $1\frac{1}{4}$ inches backward. This is a very important characteristic of the rifle, since on this account the mechanism is not subjected to an excess strain due to a sudden start at the instant the gas impinges upon the piston. This slow start delays the opening of the chamber sufficiently to allow the high barrel pressure to decrease.

55. *Second phase.—a. Action of recoil spring.*—The sear nose is depressed, disengaging the sear, and the slide moves forward under the action of the recoil spring. The position of the bolt link pin is slightly below a line joining the bolt lock pin and the hammer pin; therefore as the slide starts forward the joint at the bolt link pin has a tendency to buckle downward. It is prevented from doing this by the tail of the feed rib on the bolt which extends backward under the bolt lock, also by the upper front shoulder of the bolt link being in contact with the locking surface of the bolt lock. Since the joint can not buckle, the entire mechanism moves forward with the slide. When it has traveled about $\frac{1}{4}$ inch, the front end of the feed rib impinges on the base of the top cartridge, which the magazine spring and lips are holding up in its path.

b. Feeding.—The cartridge is carried forward about $\frac{1}{4}$ inch, when the nose of the bullet strikes the bullet ramp or guide on the breech of barrel, and is deflected upward toward the chamber. This action also guides the front end of the cartridge from under the magazine lips. The base of the cartridge approaches the center of the magazine, where the lips are cut away and the opening enlarged, and at this point is forced out

of the magazine by the magazine spring. The base of the cartridge slides across the face of the bolt and under the extractor. Should the cartridge fail to slide under the extractor, the extractor will snap over its head as the bolt reaches the forward position. When the cartridge is released by the magazine, the nose of the bullet is so far in the chamber that it is guided by the chamber from this point on.

c. Locking.—When the slide is about 2 inches from its forward position, the circular cam surface on the under side of the bolt lock begins to ride over the rear shoulders of the bolt supports, and the rear end of the bolt lock is cammed upward. The bolt link pin passes up above the line joining the bolt lock pin and hammer pin. The joint at the bolt link pin now has a tendency to buckle upward, and the bolt lock being opposite the locking recess in the receiver is free to, and does, pivot upward about the bolt lock pin. The bolt link revolves upward about the hammer pin, forcing the bolt lock up, and a rounded surface on the bolt lock just above the locking face slips over the locking shoulder in the receiver, giving the lock a lever action which forces the bolt home to its final position. The two locking surfaces on the bolt lock and the receiver register as the hammer pin passes under the bolt link pin.

d. Igniting the cartridge.—The lug on the firing pin is buried in the slot on the underside of the bolt lock at all times except when the bolt is locked in the forward position. Therefore, the firing pin is locked away from the face of the bolt during all the backward and forward motion of the bolt. When the hammer pin passes under the bolt link pin, the firing pin has been released by the bolt lock. The slide and hammer move forward about $\frac{1}{16}$ inch farther, and the center rib of the hammer strikes the head of the firing pin, driving it forward, and igniting the cartridge.

e. Termination of second phase.—The forward end of the slide strikes a shoulder at the rear end of the gas cylinder tube which terminates the forward motion. The forward motion is not terminated by the hammer on the firing pin. This can be seen by examining the head of the firing pin when the gas cylinder tube is assembled to the receiver, and the bolt mechanism is in the forward position. The firing pin has still about $\frac{1}{8}$-inch clearance from its extreme forward position.

NOTE. The locking shoulder of the receiver is inclined forward. Its surface is perpendicular to the line through the bolt lock which the shock of the explosion follows; therefore, the

force of this shock is exerted squarely against this normal surface. It should be noted that the speed of the bolt mechanism is slowed down gradually from the instant that the bolt lock starts to rise until the hammer pin passes under the bolt link pin, when its speed is zero.

56. *Functioning of buffer.—a.* The buffer system consists of a tube, in which are placed, successively from front to rear, the buffer head; a brass friction cup with concave interior which is split to allow for expansion; a steel cone to fit into the cup. Four of these cups and cones are placed one after the other in series. In rear of these is the buffer spring, and finally the buffer nut, which is screwed into the end of the tube and forms a seat for the spring.

b. The action.—The buffer head, struck by the rear end of the slide, moves to the rear, forcing the cups over the cones and causing them to expand tightly against the tube, consequently producing considerable friction as the cups move back and compress the buffer spring. Thus the rearward motion of slide is checked gradually and there is practically no rebound. The spring returns the buffer head and friction cups and cones to their original positions.

57. *Functioning of trigger mechanism.—a.* The trigger mechanism has three settings:

(1) *Automatic* (*A*).—When so set the sear is depressed as long as the trigger is held back and the piece will continue firing until the magazine is emptied.

(2) *Semiautomatic* (*F*).—When so set the sear is depressed, thereby disengaging the sear and sear notch when the trigger is pulled, but the mechanism is so constructed that the sear rises and engages in the sear notch when the slide comes back again, and the sear and sear notch will not disengage until the trigger is fully released and then pulled. With this setting the piece fires one shot for each pull and release of the trigger.

(3) *Safe* (*S*).—When so set the sear can not be released from the sear notch by pulling the trigger.

b. The action of the trigger mechanism is taken up in phases, and should be followed on the mechanism itself as the explanation proceeds. Have the trigger guard stripped completely. Study the shape of the change lever and note the following:

(1) It is a bar about ¼ of an inch in diameter.

(2) It has three shallow longitudinal slots cut on top of the bar, as the handle is held vertically.

(3) The side of the bar is slotted in such a way as to leave a little tongue of metal in the center and at the lower edge of the slot.

58. *Setting change lever.—a.* Assemble the change lever and spring to the trigger guard. Note that the toe of the change lever spring is seated in one of the longitudinal slots on the change lever, and that as the lever is turned from one position to another it seats in the other slots. The only function of the spring and the longitudinal slots is to hold the change lever in the position in which it is set.

b. Assemble the trigger and pin to the guard.

c. Turn the change lever to rear or safe position. Note that in this position the slot is turned slightly upward, and that the full surface of the bar is on the bottom. Pull the trigger. Note that the rear top end of the trigger is slotted longitudinally, and that the metal on each side of the slot forms two shoulders which rise against the bottom of the change lever bar.

d. Push the change lever over to the vertical position, which is the automatic setting. Pull the trigger as before and note that the slot in the change lever is turned to the front, and that the two shoulders of the trigger, which before engaged the full surface of the change lever bar, now are free to pass up into the slot of the change lever; also that the tongue of metal on the bottom of the change lever slot passes through the longitudinal slot in the end of the trigger.

e. Now push change lever forward to single shot position.

f. Note that now the slot is turned partially down and that when the trigger is pulled the rear end of the trigger passes up into the change lever slot; also that the tongue of metal in the bottom of the change lever slot is now turned back and does not pass through the slot in the end of the trigger as it did in the automatic position.

g. Now observe the shape of the connector. It is shaped like a boot with a toe and heel. It has a flat surface that slopes down and toward the front from the head. (Sear spring ramp.) In rear of the head the profile extends straight downward for about ⅛ inch, then slopes slightly to the rear for 0.12 inch. (Sear carrier ramp.) This last slope is used in a cam action to be explained later. Note the narrow, flat top surface of connector. Its function is to raise the forward end of sear until cammed out from under the latter.

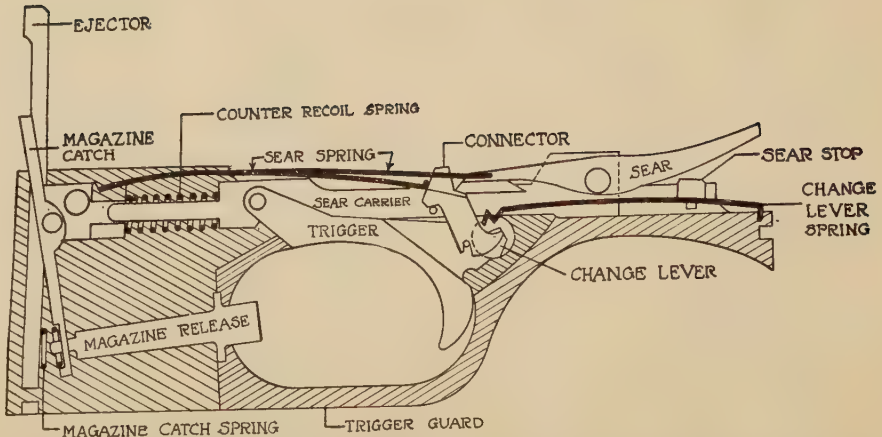


PLATE 26a.—Showing trigger mechanism, single-shot firing. The connector, cammed forward from under the forward end of the sear by the under cam surface of the sear carrier, permits the forward end of the sear to return to position under tension of sear spring, causing the rear end of the sear to engage in the sear notch of the slide

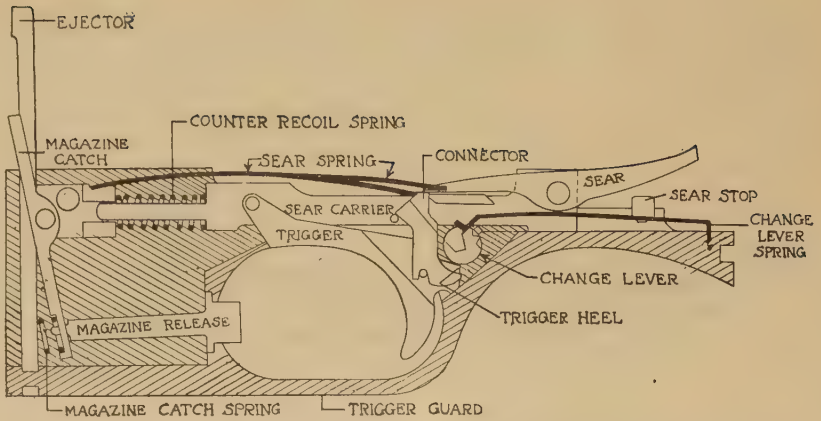


PLATE 26b.—Showing trigger mechanism set on safe. Cylindrical portion of the change lever resting over the heel of the trigger prevents the upward movement of the trigger and the releasing of the sear

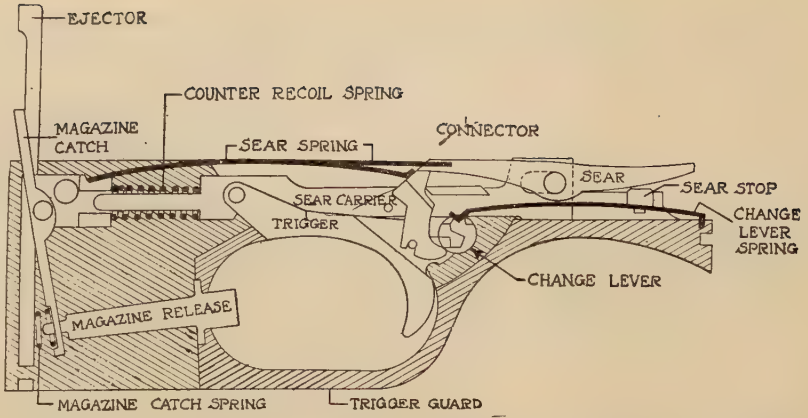


PLATE 26c.—Showing trigger mechanism, automatic firing. Toe of the connector engages under the connector stud on the change lever, preventing the connector from rising sufficiently high to be cammed forward from under the fore end of the sear; head of the connector holding up fore end of sear, depressing rear, preventing the rear end of sear from engaging in the sear notch of the slide

h. Place the connector on the connector pin and set change lever to safe, pull the trigger, and note that the connector is not raised, for the obvious reason that the trigger itself can not be raised because the change lever bar is in its way.

i. Turn change lever to automatic position, pull the trigger, and note that the head of the connector is raised and held in a vertical position and can not be tipped forward. The tongue on the change lever engages the toe of the connector as the trigger is pulled and holds the connector upright.

j. Turn the change lever to single shot position, pull the trigger, and note that the tongue on the change lever does not now engage the toe of the connector, and that the head of the connector can now be tipped forward.

k. Observe now the cross pin on the sear carrier called the connector stop; also that just in rear of the connector stop and on the underside of the sear carrier is an inclined surface sloping upward in the metal which joins the two sides of the sear carrier. This surface has a cam action with the above-mentioned surface on the connector.

l. Completely assemble the trigger mechanism.

m. Note that the center leaf of the sear spring presses on the front sloping surface of the connector and tends to press the head of the connector backward. Set change lever on safe and pull trigger. Note the head of connector is not raised above the sear carrier, for reasons given previously. Therefore, the sear nose is not depressed and hence the safe position. Change over to the automatic position and pull the trigger; the head of the connector is raised and held in the vertical position, thus depressing the sear nose and holding it in this position which obviously gives automatic fire as long as there are cartridges in the magazine. The tongue on change lever tends to hold connector vertically and the ramp on sear carrier tends to cam connector forward. The forces exerted by these two parts on connector are opposed, hence trigger mechanism is locked when trigger has been pulled enough to release slide.

n. Set change lever for single shot; pull trigger slowly. Note that at first the head of the connector rises and thereby depresses the sear nose, which allows the slide to go forward. If the squeeze of the trigger is continued the previously mentioned cam surface on the connector comes in contact with the cam surface of the sear carrier, and the head of the connector is cammed forward against the pressure of the center leaf of the

sear spring. The connector disengages the front arm of the sear and the two outside leaves of the sear spring depress it, and the sear nose is thereby raised up in the path of the slide and engages the sear notch when the slide moves back, thus allowing only one shot to be fired. When the trigger is released the center leaf of the sear spring presses the head of the connector downward and back under the forward end of the sear, so that when the trigger is pulled again the action is repeated and single shot is fired.

o. In the semiautomatic position the connector stop prevents the head of the connector being tipped so far forward that the sear spring can not push it back in place when the trigger is released. The only function of the change lever in the semiautomatic position is the limiting of the upward travel of the trigger when its upper rear shoulders strike the top of the slot in the change lever, which in this position is turned down.

Section V

STOPPAGES

59. *Classes of stoppages.*—Stoppages are divided into two general classes:

a. Prolonged, which are due to failure of some part which can not be replaced or to a failure which can not be remedied in the field under fire, or without expert assistance or machine-shop facilities.

b. Temporary, due to—

(1) Failure of some part of the rifle of which a duplicate is carried.

(2) Faulty ammunition.

(3) Improper care of the rifle.

(4) Faults of the automatic rifleman.

Note.—This section deals entirely with temporary stoppages.

60. *Causes of stoppages.—a. Dirt.* (Natural fouling incident to firing and also to careless cleaning).

b. Insufficient oil. (From failure to oil and because of oil burning up during firing.)

c. Extraneous matter in working parts. (Due to poor cleaning, brass chipped from cartridges, breakages, blown primer.)

d. Improper assembly of rifle. (Gas ports not registered, middle prong of sear spring riding on one wall of sear carrier, etc.)

e. Breakages. (Due to wrong assembly, oversize or undersize parts, burrs, incorrect heat treatment, overheating of parts incident to firing.)

f. Burred parts. (Due to improper assembly, use of force, dirt, grit, and foreign matter in mechanism.)

g. Magazine troubles. (Due to bent or dented magazines, worn magazine, catch notch, foreign matter—as blown primer—between lips of magazine and top carriage.)

h. Faulty ammunition. (Failure of primer of charge, dented cartridges.)

i. Excessive play in parts. (Due to wear in stripping parts not supposed to be stripped—as removing barrel from receiver.)

j. Ruptured cartridges (due to excessive head space).—Head space is the distance between the face of the bolt and the shoulder of a standard steel test cartridge. If excessive head space exists when the cartridge is chambered properly, the cartridge case will be forced against the walls of the chamber at the instant of explosion. The cartridge case base will be driven to the rear, as it is not supported by the bolt. This results in rupture about ½ inch from the base of the cartridge. In effect, the action during the period of gas pressure within the cartridge case is the same as if the chamber gripped all the outer surface of the cartridge case except the part about ½ inch from the head. The pressure within the cartridge case being approximately 50,000 pounds per square inch, the ungripped portion of the case is torn from the gripped part and forced back against the face of the bolt. (The case is never pulled apart by the extractor.)

61. *Method of reducing stoppages.*—*a.* Temporary stoppages have been divided into four positions, dependent upon the position where the bolt stops. The position of the stoppage is determined by pulling the operating handle to the rear until it strikes the hammer pin.

b. Boundaries of the positions are—

(1) *First position,* mechanism and operating handle fully closed.

(2) *Second position,* operating handle strikes hammer pin anywhere from fully closed to a point where operating handle

plunger pin rides over raised shoulders on ribs of operating handle guide way.

(3) *Third position*, operating handle strikes hammer pin anywhere from second position to a point directly over "F" of change lever setting.

(4) *Fourth position*, operating handle strikes hammer pin anywhere between third position and rear.

Classified table of stoppages

Position	Stoppage	Cause	Remedy in field
First position Operating handle fully home.	1. Failure to feed.	1. Magazine troubles—	1.
		a. Magazine not fully home.	a. Push magazine fully home.
		b. Obstruction between lips of magazine and top cartridge.	b. Change magazine.
		c. Weak magazine spring.	c. Change magazine.
		d. Magazine dirty.	d. Change magazine, clean later.
		e. Magazine tube or lips dented or bent.	e. Change magazine.
		f. Magazine catch notch worn.	f. Change magazine.
	2. Failure to fire.	2. a. Broken or short firing pin.	2. a. Change firing pin.
		b. Weak recoil spring.	b. Change recoil spring.
		c. Excessive friction.	c. Clean and oil friction surfaces, chamber and ammunition.
		d. Faulty ammunition—defective primers or charges.	
	3. Insufficient gas.	3. a. Gas cylinder not properly adjusted.	3. a. Correct adjustment of gas cylinder.
		b. Gas ports clogged.	b. Turn cylinder to next larger port. Clean at first opportunity.
		c. Piston binding account dirty piston and cylinder.	c. Turn cylinder to next larger port. Clean and oil at first opportunity.

Classified table of stoppages—Continued

Position	Stoppage	Cause	Remedy in field
First position—Continued Operating handle fully home—Con.	3. Insufficient gas—Contd.	3. d. Dirty chamber.	3. d. Turn cylinder to next larger port. Oil chamber and ammunition. Clean and oil chamber at first opportunity.
		e. Lack of oil.	e. Oil chamber, ammunition and friction surfaces.
Second position Operating handle strikes hammer pin anywhere from fully closed back to top of raised shoulders on operating handle guideway.	1. Obstruction or burred surface.	1. Extraneous matter or burrs— a. On face of the bolt. b. In breach recess where bolt and receiver join. c. On bolt lock. d. In bolt lock recess.	1. Feel on face of bolt; in receiver and chamber; on bolt lock; and in bolt lock recess, for burrs or extraneous matter. Remove extraneous matter burrs.
	2. Faulty ammunition.	2. Battered round.	
Third position Operating handle strikes hammer pin between second position and point directly over "F" on receiver.	1. Ruptured cartridge.	1. Excessive head space.	1. Use ruptured cartridge extractor to remove ruptured cartridge case. If recurs, clean and oil chamber and oil ammunition.
	2. Failure to feed completely.	2. a. Broken firing pin protruding from face of bolt. b. Other obstruction that prevents base of cartridge from sliding up across face of bolt.	2. a. Replace firing pin. b. Remove obstruction.
	3. Mechanism wedged tightly.	3. Obstruction—extraneous matter between bolt support and bolt lock.	3. Remove obstruction.
	4. Faulty ammunition.	4. Battered round.	

Classified table of stoppages—Continued

Position	Stoppage	Cause	Remedy in field
Fourth position Operating handle strikes hammer pin between third position and all the way to the rear.	1. Failure to extract.	1. a. Dirty, rusted or pitted chamber.	1. Use cleaning rod to remove empty cartridge case and then— a. Clean and oil chamber and oil ammunition.
		b. Dirt under extractor.	b. Clean face of bolt and extractor.
		c. Defective extractor.	c. Change extractor.
		d. Defective extractor spring.	d. Change extractor spring.
		e. Defective ammunition—soft rims on cartridges.	
	2. Trigger will not release slide, the piece being cocked.	2. Trouble in trigger mechanism— a. Change lever set on "S."	2. a. Set change lever on "F"? or "A."
		b. Improper assembly which results in failure of center prong of sear spring to push connector back under front end of sear.	b. Take out trigger guard and examine. Replace necessary parts and assemble properly.
		c. Defective sear spring.	c. Same.
		d. Defective or lost connector.	d. Same.
	3. Obstruction.	3. Extraneous matter between ejector and bolt.	3. Remove obstruction.

NOTE 1.—The first thing to do in case of any stoppage is to pull back the operating handle and try to fire again. This will remove the cause of a large percentage of stoppages.

NOTE 2.—If the stoppage recurs, pull back the operating handle slowly to determine position of stoppage. Then apply proper remedy.

NOTE 3.—If no ruptured cartridge extractor is available, oil the nose of a cartridge and cover it with a small amount of dirt or sand; then place it in the chamber and let the bolt go forward. Ruptured cases may often be removed in this manner. Clean and oil the chamber and bore very carefully after doing this.

62. *Explanation of stoppages.—a. First position.*—(1) *Failure to feed.*—(Usually traceable to magazine trouble.) An obstruction (usually a blown primer) between lips of magazine

and top cartridge prevent the new cartridge from being engaged on the feed rib and causes the bolt to go home on an empty chamber. The same stoppage occurs when the magazine catch notch becomes so worn as to permit the magazine to drop down slightly and also when the magazine catch breaks, or when the magazine is not pushed clear up in magazine opening.

(2) *Failure to fire.*—(Repeated failure to fire is usually due to a broken or short firing pin.) Frequently the beginner will mistake a misfire due to an obstruction between the face of the bolt and the breech for one due to a broken firing pin. He should remember that the latter is a first-position stoppage and the former a second-position stoppage. A misfire due to a broken firing pin will not show any indentation on the primer. The second-position stoppage almost invariably shows a slight indentation.

(3) *Insufficient gas.*—A stoppage in the first position with an empty case in the chamber is due to insufficient gas, which in turn may be due to the gas ports not being properly registered or being partially clogged, or to excessive friction because of lack of oil and a dirty chamber.

b. Second position.—A failure to close will usually be caused by an obstruction lodging between the face of bolt and the breech, thus holding firing pin away from primer. The primer will be slightly dented. This stoppage is typical. When the piece stops in the second position always look for an obstruction either on the face of the bolt or in breech recess where bolt and receiver join; the most frequent obstruction is the blown primer. Often it is difficult to determine. Frequently it drops off as the bolt is drawn back. If the stoppage recurs, it is certain that an obstruction is in the rifle between the face of the bolt and the breech or between the bolt lock and receiver top plate.

c. Third position.—(1) *Ruptured case.*—This stoppage is due to excessive head space. When the immense pressure following the ignition of the charge is taken up by the cartridge case, the latter not being properly supported by the bolt will rupture about $\frac{5}{8}$ inch from the base.

The short end at the base must then be extracted and the larger portion of the case will remain in the barrel. A temporary correction for such a stoppage is to clean and oil the chamber thoroughly and oil the cartridges.

(2) *Broken firing pin.*—This stoppage is caused by the end of a broken firing pin protruding through the firing pin hole in the face of the bolt. The cartridge is then kept from sliding

under the extractor as the bolt moves forward and a third-position stoppage will result. The cartridge will show an abrasion near the base. To remedy this stoppage the firing pin must be replaced.

(3) *Mechanism wedged fast in third position.*—This is a rare stoppage. The slide can not be moved forward nor backward. It occurs when any obstruction gets between one of the bolt supports and the bolt lock. As the slide is driven to the rear the bolt lock is wedged fast by the obstruction. This stoppage has been caused by a blown primer or by a piece of metal broken off the rear of firing-pin channel wall. It should be reduced in a properly equipped shop.

d. Fourth position.—(1) *Failure to extract.*—This stoppage is generally due to a dirty or pitted chamber. Usually the empty case will have a small part of the rim pulled off by the extractor. This case can be removed only by the use of the cleaning rod. A few drops of oil in the magazine will ordinarily prevent this stoppage temporarily. The only permanent remedy is a thorough cleaning of the chamber. If the gun develops this stoppage before a large number of rounds has been fired, it is not the fault of the gun, but is due to improper cleaning after the last firing.

(2) Another fourth-position stoppage is that in which the piece is cocked and the trigger mechanism will not release the sear when set at "A" or "F." This stoppage is traceable to trouble in the trigger mechanism and may be due to a broken sear spring, a broken or lost connector, an improper assembling of the sear spring, or to any cause which has the effect of moving the middle prong of the sear spring too far to the front with respect to the connector, so that the connector is not cammed under the tail of the sear.

(3) Another fourth-position stoppage occurs when a blown primer wedges itself between the points of the ejector and the face of the bolt, thereby holding the bolt and mechanism back in the fourth position.

63. *Causes of failures to function.—a. Probable causes of failure to extract.*

(1) Defective extractor.
(2) Dirt under extractor.
(3) Dirt in chamber.
(4) Pitted chamber.
(5) Weak extractor spring.
(6) Defective ammunition.

b. Probable causes of failure to eject.
(1) Insufficient gas.
(2) Defective extractor.
(3) Dirt under extractor.
(4) Ejector does not fit up close to bolt.
(5) Ejector binds on bolt.
(6) Ejector has too much backward play.
(7) Ejector bent backward or otherwise defective.
(8) Weak extractor spring.
(9) Defective ammunition.
c. Probable causes of failure to breech.
(1) Dirt between bolt and rear end of barrel.
(2) Primer in mechanism, generally in front of bolt.
(3) Defective bolt lock or pin.
(4) Defective magazine.
(5) Piston binding.
(6) Excessive friction.
(7) Recoil spring too short.
d. Probable causes of insufficient gas.
(1) Ports clogged.
(2) Poor fit between gas cylinder tube and bracket.
(3) Gas leakage around piston (worn cylinder).
(4) Piston binding, or cylinder dirty.
(5) Gas cylinder threaded in too far, or vice versa.
e. Probable causes of ruptured cartridges.
(1) Locking surface of bolt lock worn.
(2) Bearing between bolt and bolt lock worn.
(3) Face of bolt worn.
(4) Chamber of barrel worn or pitted.
(5) Locking shoulder of receiver worn.
(6) Bolt supports loose or worn.
(7) Defective ammunition.

Section VI

CARE AND CLEANING

64. *Reference.*—Directions for care and cleaning the piece follow in paragraphs 88 to 98. Every man to whom the piece is issued must be held personally responsible that it is in serviceable condition at all times. Only by careful observance of the instructions can proper care be exercised. It is therefore

the distinct responsibility of the company commander that his men are first adequately instructed in this important matter before he can justly hold them accountable.

65. *Rifles in storage.—a. Preparation for storage and shipment.*—Rifles which have been withdrawn from issue to enlisted men from whom they received proper care at short intervals should be stored in arms chests in the organization storeroom. When thus stored, even for a short period, or when they are to be shipped either by rail or water, they should be cleaned and prepared with particular care. *The bore should invariably be cleaned with the standard metal fouling solution* as described in subparagraph *b* (3), after which the bore should be thoroughly washed with water to insure that all traces of the solution are removed. The bore, all parts of the mechanism of the rifle, and the exterior should be thoroughly cleaned and then dried perfectly dry with rags. In damp climates particular care must be taken to see that the rags are dry. After drying a part the bare hands should not touch that part. All metal parts should then be heavily coated with cosmic, known as rust-preventing compound semisolid (Q. M. specification No. 2–53). The cosmic should be warmed slightly and applied with a brush. The bore should be plugged and poured full of cosmic, the surplus poured out, the plug removed, and the bore allowed to drain. Special care should be taken to insure that the gas system is thoroughly cleaned and greased and that the gas ports are free from fouling. Then, handling the rifle by the stock and forearm only, it should be placed in the arms chest, the wooden supports at the butt and nozzle having previously been painted with cosmic. Under no circumstances should a rifle be placed in store contained in a cloth or other cover, or with a plug in the bore. Such articles collect moisture which causes the weapon to rust.

66. *Points to be observed before, during, and after firing.—a. Before firing—*

(1) Test trigger mechanism at safe (A), and (F).

(2) See that bore is clear and clean.

(3) Work slide back and forth rapidly several times to see that it moves freely and does not stick.

(4) Test ejector and extractor with dummy or empty case.

(5) Verify proper setting of gas port.

(6) Verify oiling.

(7) Verify cleaning.

(8) Examine magazines and eliminate faulty ones.

(9) See that kit contains oil can full of oil and full complement of spare parts.

b. During firing—

(1) Keep magazine and chamber protected from dirt.

(2) Do not allow rifle to become dry.

(3) Clean bore and gas system frequently.

c. After firing—

(1) Remove loaded magazine.

(2) Let bolt forward.

(3) Wipe out bore and oil rifle.

(4) Clean rifle thoroughly at first opportunity.

(5) Replenish spare parts.

(6) Reload magazines as soon as possible.

67. *Protection of guns against gas.—a. When rifle can not be dismounted.—*

(1) Wipe over with a well-oiled rag all surfaces exposed to the gas except bore.

(2) Fire occasional shots and between these work operating handle back and forth.

(3) Wipe magazines and spare parts with oiled rag and replace in belts.

b. When rifle can be dismounted.—Proceed as above, except that the bore should be plugged at each end with an oiled rag and the rifle stripped, wiped with oil, assembled, and if possible wrapped in a waterproof sheet.

c. After the attack.—(1) Clean all parts in boiling water with a little sal soda.

(2) Clean bore thoroughly.

(3) Wipe all trace of gas from contents of spare-parts case.

(4) If time permits, soak belt equipment for 2 hours in solution containing 1 part soda, 3 parts soft soap, and 10 parts water. Then scrub the belt and hang it up to dry.

Section VII

DETAILED DESCRIPTION OF GUN

68. *Detailed description of gun.*—The rifle can best be described under two headings: The stationary portions and the moving portions.

a. The *stationary portions* consist of the receiver and parts directly or indirectly attached thereto. The receiver (1) is made of a single piece of steel formed at the rear end to receive

the butt stock (125) and the buffer tube (65), which latter part is threaded into the receiver. The butt stock is held in place by the butt stock bolt (126) which threads into the rear end of the buffer. The buffer tube contains, from front to rear, the buffer (66), four sets of buffer friction cups (68) and cones (67), the buffer spring (70), and the buffer nut (69). The bronze buffer friction cups fit over the steel cones and are split to allow expansion when under pressure. The butt plate (130) is attached to the butt stock by means of screws (136 and 137).

Butt plate is provided with a trap (131) which when open will allow the removal of the butt stock bolt. The butt swivel plate (150) is fastened to the bottom of the butt stock by means of screws (151). To this bracket is attached the swivel link (inner) (148) and swivel link (outer) (149), and the swivel (143) by means of swivel screws (147). This swivel arrangement provides a three-way motion for the gun-sling strap connection.

The marking for the rifle is rolled on the top of the receiver at the front end. In rear of this marking the top plate (2) is fitted into dovetail guides in the receiver. The rear-sight base (94) is driven into dovetail grooves at the rear end of the top of the receiver. The rear-sight base is further positioned by the rear-sight base spring screw (96). The rear-sight leaf (104) is pivoted at the rear of the rear-sight base, its operation being controlled by the rear-sight base spring (95). The rear-sight slide (99) and rear-sight slide catch (100) operate up and down on the rear-sight leaf in such a way as to give a range adjustment of from 100 to 1,600 yards. The leaf is also provided with a battle sight.

The ejection opening is located on the right side of the receiver, as is the hammer pin hole. The hammer pin hole is located so as to allow the disassembling of the hammer pin and subsequent parts.

The left side of the receiver is provided with a guide for the operating handle (88). The operating handle is fitted with the operating handle plunger (89) which is held in place by the operating handle plunger pin (90), and which is operated by the operating handle plunger spring (91) in such a way as to retain the operating handle in the forward position unless force is applied to move it toward the rear. The bolt guide (72) is held in the side of the receiver above the operating handle by the bolt guide spring (73), which is attached to the inside of

the receiver. The edge of the bolt guide projects inside the receiver, forming a support for the bolt (75) when it is in the rear position. The change lever stop (20) is also assembled to the left side of the receiver, this part being held in place by the change lever stop spring (21), which is pinned to the inside of the receiver.

The bolt support, right (3), and bolt support, left (4), are riveted to the inside of the receiver by means of three bolt-support rivets (5) each, in such a way as to support the bolt (75) when it is in its forward position. The rear corners of the bolt supports are rounded so as to aid by their camming action the raising of the bolt lock (80). The inner edges of the bolt supports are formed to guide the cartridge into the chamber as it is stripped from the magazine. The locking shoulder of the receiver is located just in rear of the top plate. This shoulder supports the bolt lock and bolt when the cartridge is fired.

The bottom of the receiver is left open to receive the magazine at the front end. The rear portion of the opening is closed by the trigger guard (10), which fits up between the sides of the receiver. The rear end of the trigger guard is supported by a tongue in the receiver, which fits into a corresponding groove in the trigger guard. The forward end of the trigger guard is held in place by the trigger guard retaining pin (11). The trigger guard retaining pin spring (12) locks in an indentation in the receiver, thus holding the pin in place.

The ejector (29) is retained in a T-cut at the front end of the trigger guard by means of the ejector lock (30) and spring (31). The top of the ejector extends upward in such a way as to operate in the ejector cut in the bolt. The magazine catch (32) is pinned to the trigger guard. The upper end projects through the ejector and provides a catch which holds the magazine in place. The magazine catch spring (33) is positioned between the ejector and the magazine catch, below the pivot point of the latter. This holds the upper end of the magazine catch in the forward position. The magazine release extends forward from the trigger guard and operates against the lower end of the magazine catch, thus moving the upper end of the catch rearward when the release is pushed forward.

The trigger (13) is pivoted to the trigger guard by the trigger pin (14). The connector (16) fits loosely in the trigger, the lower notch riding on the connector pin (15). The upper edge of the connector comes in contact with the front end of the

sear (23) when the trigger is raised. The cam surface in rear of this edge engages the corresponding surface of the sear carrier (25) if the change lever (17) has been set at "F." The sear (23) is pivoted near the rear end of the trigger guard by the sear pin (24) which passes through the trigger guard and the sear carrier (25), the holes in the trigger guard being slotted. The rear end of the sear is provided with a nose which engages the sear notch in the slide (45). The under surface of the front end of the sear engages the connector when it is raised by the action of the trigger. The sear spring (26) is held in grooves in the trigger guard. This spring is of the leaf type, the middle tongue bearing against the connector, holding this latter part in position. The two outside tongues of the sear spring bear downward against the forward end of the sear.

The change lever (17) extends laterally through the trigger guard, being held in place by the front tongue of the change lever spring (18). This tongue also engages in notches around the shaft of the change lever, thus holding the change lever in the various positions. The handle of the change lever extends upward along the left side of the receiver on which is marked the positions: "F" for semiautomatic fire, "A" for full automatic fire, and "S" for safety. The cuts and lugs on the underside of the change lever shaft control the action of the trigger and connector, thus giving the classes of fire mentioned. The change lever stop (20) in the receiver prevents the change lever from being set at safety without intention. The change lever spring (18) is held in the trigger guard by means of grooves. The sear stop (19) is assembled to the rear tongue of this spring. The sear carrier (25) is held in place at the rear end by the sear pin and at the front end by the trigger pin, the holes in the sear carrier for the trigger pin being slotted so as to allow a certain amount of movement of the sear carrier in a forward direction. This movement is arrested by the counterrecoil spring (28) which surrounds the spindle at the front end of the sear carrier, bearing against the front shoulder of the sear carrier and the opposite shoulder of the trigger guard. Thus, when a shock is imposed upon the sear it is transmitted to the sear carrier through the sear pin, which operates in slotted holes in the trigger guard. The trigger operates between the side walls of the sear carrier. The connector stop (27) is in the form of a pin passing between these side walls and forming a stop which prevents excessive forward movement of the connector.

The forward end of the receiver near the top is threaded to receive the barrel (60) which is screwed in tightly to the draw marks. The barrel is of plain, light construction, the large diameter at the breech end being carried well forward of the chamber. The chambering and rifling of the barrel are of the usual design for U. S. caliber .30, model 1906, ammunition. The gas port is provided on the underside of the barrel about 6 inches from the muzzle end. This port coresponds to a similar port in the gas cylinder tube bracket (56) which surrounds the barrel at this point, being held in place by the gas cylinder tube bracket pin (57). The gas port extends through this bracket, which is provided with a T-cut which retains the front end of the gas cylinder tube (52). The front-sight base (61) surrounds the muzzle end of the barrel. This carrier is held in place by the front-sight key (62) and the front-sight key pin (63). The front-sight blade (64), which is of the usual construction, dovetails transversely into the top of the front-sight base. The front-sight blades vary in height in accordance with the requirements of targeting the rifle at the factory. After targeting, the blade is staked in place with a prick punch. The muzzle end of the barrel is threaded to receive the flash hider (154), which is of plain, tubular construction, provided with a hole at the rear end, which takes the combination tool.

The rear end of the gas cylinder tube (52) is held up into the receiver by the gas cylinder tube retaining pin (53), the spring of which locks in an indentation in the left side of the receiver. The tube provides a guideway for the gas piston (46), and is threaded at the front end to receive the gas cylinder (50). This end is notched to engage the gas cylinder lock (51). The ribs at the top engage the T-cut in the bracket of the barrel holding the gas ports in close contact. The shoulder at the rear end of the tube provides a stop for the front end of the slide (45). The lugs above this bear against the barrel. The rear portion of the barrel and gas cylinder tube are protected on the bottom and sides by a large wooden forearm (118), which is attached to the gas cylinder tube by means of the forearm screws, long (120) and short (119). The forearm escutcheon (131) is permanently seated in the forearm, and acts as a nut for the forearm screw, long. The outside of the forearm is cut to provide a good gripping surface for the hand.

The recoil spring guide head (42) engages retaining shoulders in the front end of the receiver. The rear surface of this head

is checkered to facilitate stripping and assembling. The recoil spring guide (41) is riveted into the head which forms the rear seat for the recoil spring (40). The rear portion of this spring is guided by the recoil spring guide, the front portion being retained in the hollow gas piston (46).

The front swivel bracket (145) clamps around the gas cylinder tube in front of the forearm. The link swivel, inner (148), and link swivel, outer (149), and the swivel (143) are attached to the front swivel bracket by the swivel screws (147) in the manner described for the butt swivel plate.

The gas cylinder lock (51) fits in the transverse hole through the head of the gas cylinder (50). The cylinder is provided with three gas ports of varying size. There are located around the circumference of the cylinder wall, the position and size of each being indicated by circles marked on the cylinder head. The notches for the head of the gas cylinder lock are located so as to register the gas port in the cylinder, indicated by the circle marking nearest the barrel. The inside of the gas cylinder is recessed at the forward end to provide clearance for dirt and powder fouling.

b. The *moving portions* consist of the operating, breech, and firing mechanisms.

The rings at the front of the gas piston (46) operate in the gas cylinder. The rear end of the piston threads loosely into the front end of the slide (45), and is held from rotation by the gas piston retaining pin (49). The piston is of hollow construction, the front end being closed by the gas piston plug (48) and a bearing for the forward end of the recoil spring being provided by the gas piston bushing (47).

The slide (45) extends rearward in longitudinal grooves in the receiver, clearance for the magazine being provided between the sides of the slide. The rear end of the slide is beveled slightly to form a parallel line of contact against the buffer. A sear notch is cut in the underside of the slide. The hammer (85) is held in the guides in the slide by the hammer pin (86), which also acts as the lower pivot for the bolt link (82). After the breech has locked, the front face of the hammer strikes the firing pin. The bolt link is pinned to the bolt lock (80) by the bolt link pin (83). The upper and rearward projection of the bolt link forms a bearing surface against which the bolt lock rests during the recoiling movement. This holds the rear end of the bolt lock up.

The rear locking surface of the bolt lock (80) bears against the corresponding surface of the receiver as the cartridge is ignited. The underside of the bolt lock is slotted, and a cam surface provided which engages the retracting cam of the firing pin (76). The front end of the bolt lock bears against the bolt (75) with which it is permanently hinged by means of the bolt lock pin (81). The bolt carries the firing pin (76), the retracting cam of the latter operating in the slot in the rear tail, or firing pin guide, of the bolt. The head of the firing pin extends rearward from this guide, and when struck by the hammer causes the firing pin point to project through the hole in the front face of the bolt, thus igniting the cartridge, the base of which is supported by the face of the bolt. The extractor (77) and extractor spring (78) are positioned in a recess at the front end of the bolt so that the extractor will engage the rim of the cartridge as it is driven forward into the chamber. A lug on the extractor engages a groove in the recess in the bolt and prevents the extractor from pulling out to the front.

c. The magazine consists of four pieces: The magazine tube (108), base (109), follower (110), and spring (111). The magazine tube is formed to receive a staggered double row of cartridges. Magazines having a capacity of 20 rounds are issued to rifle companies, a 40-round magazine being used especially for antiaircraft fire. A notch is cut in the rear edge of the tube which engages the magazine catch. The upper lips of the tube are formed to facilitate feeding. The magazine follower operates upward against the cartridges under the action of the magazine spring, which is supported at the bottom by the magazine base. The construction of 40-round magazines is similar to the 20-round type, except the tube is deeper and is fitted with two springs separated by a spacer.

Section VIII

STRIPPING AND ASSEMBLING

(Not done in field)

69. *Forearm group.*—*a.* To strip the forearm group, unscrew the forearm screws, long and short, and remove the wood forearm from the gas cylinder tube. The forearm escutcheon should never be removed from the forearm. Unscrew the two swivel screws which allow the removal of the gun sling swivel and the

swivel link, inner and outer. Spring the front swivel bracket off over the gas cylinder tube.

b. Before removing the gas cylinder note its setting carefully, so that it can be reassembled to the same position. Then force out the gas cylinder lock until its head clears the notch in the gas cylinder, which can then be unscrewed from the gas cylinder tube. The gas cylinder lock can be completely removed from the cylinder with a suitable drift or by prying under the head with the combination tool.

c. To assemble the forearm group, replace the forearm on the gas cylinder tube and insert the forearm screws, long and short. Spring the front swivel bracket over the gas cylinder tube and replace the swivel link, inner and outer, and swivel, fastening these in place by means of the swivel screws. All screws should be drawn up tight. Screw the gas cylinder in the gas cylinder tube to its proper setting and push in the gas cylinder lock so that its head engages the notch in the gas cylinder. The registration of gas port is indicated by the circle marking on the front of the cylinder. When on the small port the smallest circle is toward the barrel, and in this position the cylinder should be about one turn from the shoulder. Unscrew one-third of a turn successively to register the larger ports.

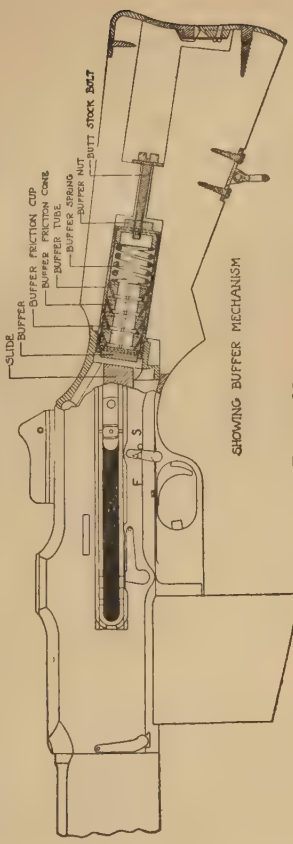
70. *Barrel group.—a.* The barrel should never be removed until replacement is necessary, and then only in a properly equipped shop. Before removing the barrel, strip the receiver of the gas operating, firing, and trigger mechanism. Barrels can sometimes be unscrewed with the combination tool by engaging the spanner in the notch provided in the breech end of the barrel. A special barrel dismounting wrench for the Browning automatic rifle is provided for use in ordnance shops. This wrench should be clamped tightly around the breech end of the barrel with the handle extending to the right. The barrel can then be started by a quick downward movement of the handle. The receiver may be held in a vise or by means of a block of wood inserted up between the side walls of the receiver.

b. The components attached to the barrel should never be removed except when replacements are necessary or for purposes of salvaging. Unscrew the flash hider with the combination tool. Drive out the front-sight key pin, drive the front-sight base off to the front, and remove the front-sight key. The gas cylinder tube bracket can then be driven off to the front after the pin has been driven out. These parts should be replaced in the reverse order.

c. When replacing a barrel always be sure that it is tight enough in the receiver never to work loose. Screw the barrel into the receiver until the draw line matches that of the receiver. Then assemble the gas cylinder tube to see if the gas cylinder tube bracket on the barrel lines up properly. If it does not, the barrel should be turned very slightly until the alignment is correct.

71. *Butt stock and buffer group.—a.* The butt-stock bolt can be unscrewed by inserting a long screw driver through the hole in the butt plate after the butt plate trap has been opened. To do this with the combination tool the butt plate must first be removed by unscrewing the butt plate screws, long and short. As soon as the butt-stock bolt has been loosened the butt stock can be withdrawn to the rear. To strip the butt plate, unscrew and remove the butt plate trap spring screw and spring. Then drive out the butt plate trap axis pin and remove the butt-plate trap.

b. The removal of the butt stock allows the stripping of the buffer mechanism. Unscrew the buffer nut and remove to the rear, in the order mentioned, the buffer spring, the four sets of buffer fric-



SHOWING BUFFER MECHANISM

PLATE 28

tion cups and cones, and the buffer. The buffer tube is threaded into the receiver, and should never be removed except for replacement. In order to assemble the butt stock and buffer mechanism, reverse the method g ven above.

72. *Rear-sight group.*—The rear sight is to be removed or stripped only when a replacement of certain part or parts is necessary. Remove the rear sight base spring screw and drive the rear sight base out to the rear. Unscrew the rear sight leaf axis screw and nut and take out the rear sight leaf. The rear sight base spring can then be removed from the base. Unscrew the rear sight slide stop screw, which will allow the slide to be withdrawn from the leaf. With a small drift drive out the rear sight slide catch axis pin and take off the rear sight slide catch and spring. To reassemble the above components reverse the order given for stripping.

73. *Receiver group.*—*a.* To strip the operating handle press in on the operating handle plunger and push out the operating handle plunger pin toward the countersunk side of the plunger. The plunger and spring can then be removed. Reverse the above method in reassembling.

b. The bolt guide spring may be lifted out of its seat in the bolt guide with the rim of a cartridge. The guide and spring can then be removed from the receiver. To reassemble these parts, insert the longer turned-over end of the bolt guide spring in its hole on the inside of the receiver. Then replace the bolt guide and hold it while the spring is pushed over until the shorter turned-over end engages the groove in the bolt guide. The change lever stop and spring can be removed after the change lever stop spring pin has been driven out. This should never be done except when necessary.

Section IX

ADJUSTMENT AND INSPECTION

74. *Gas adjustment.*—*a.* The rifle should normally be operated on the smallest port, and this setting will never be varied unless the rifle shows signs of insufficient gas. To align the smallest port, screw in the gas cylinder with the combination tool until the shoulder of the gas cylinder is about one turn from the corresponding shoulder of the gas cylinder tube and the smallest circle on the cylinder head is toward the barrel.

Lock the cylinder in position. If, upon firing, the rifle shows signs of insufficient gas, try setting the cylinder one complete turn on each side of the original setting. As soon as the proper setting has been obtained the rifleman will carefully note the position so that he can quickly assemble the cylinder to the proper point without trial.

The larger ports are provided for use in case of emergency, when the action of the rifle has been made sluggish through the collection of dirt and grit, or the lack of oil, and the conditions render it impossible for the riflemen to correct these troubles. For this reason the threads should be kept clean and oiled and the cylinder free to turn if necessary. The extractor, ejector, and the chamber of the barrel should be examined and cleaned and defects corrected when possible. Under adverse conditions, and when signs of insufficient gas become apparent, the cylinder should be unscrewed one-third of a turn, thus registering the medium circle and aligning the medium port with the gas orifice. Repeat this operation in order to connect the largest port with the barrel.

Excessive friction or dirt may sometimes result in the failure of the action to complete the forward movement under the action of the recoil spring, which part may also have become permanently set or short from continued use under conditions of excessive heat. In such case replace the recoil spring.

b. Results of insufficient gas.—(1) Failure to recoil (usually due to a misaligned or excessively clogged gas port, or extremely dirty mechanism).

(2) Failure to eject.

(3) Weak ejection.

(4) Uncontrolled automatic fire (exceptional).

c. Results of too much gas.—(1) Excessive speed, causing pounding.

(2) Excessive heat in gas-operating mechanism.

75. *Notes for repairmen.*—The following notes are prepared for the use of repairmen: Filing, or otherwise altering parts, should only be done under the strictest supervision, as this often fails to remedy the trouble and results in damage to the rifle. Filing and altering of parts are sometimes necessary, but should never be done except by an expert repairman, under the direction of a commissioned officer competent to supervise the work. All defective parts should be distinctly marked or tagged to avoid their future use.

a. Barrel.—(1) The barrel should not be removed until worn to such an extent as to require replacement. This wear usually occurs in the rifling near the breech or in the chamber. A barrel is usually good for 8,000 rounds, after which time the accuracy depreciates quite rapidly. A worn or pitted chamber may result in ruptured shells, or in the shells swelling and sticking in the chamber, rendering extraction difficult or uncertain.

(2) The gas port through the barrel and gas cylinder tube bracket may become stopped up and not allow sufficient gas to pass through to insure positive action. To remedy this difficulty clear the port with the gas cylinder cleaning tool. The lower surface, especially that portion immediately surrounding the port of the gas cylinder tube bracket, should fit closely to the corresponding surface of the gas cylinder tube. Some wear at this point can be taken up by bending the lips of the bracket down slightly, tapping them lightly with a hammer, or by bending the retaining rib of the tube back at each edge, thus bringing the surfaces into closer contact. A smooth, close fit is desired. If the fit is excessively tight, some metal may be removed from the surface of the gas cylinder tube bracket by the use of the special hand scraper provided for this purpose, or with an oilstone or dead smooth file. Care should be exercised not to remove too much metal, especially from that surface near the port.

b. Gas-operating mechanism.—(1) The front retaining rib of the gas cylinder tube may become too loose in the gas cylinder tube bracket, resulting in insufficient gas and requiring adjustment, as described above, or replacement. The wall of the tube may become dented, thus binding the piston. In some cases it may be possible to straighten this out until the piston works freely. In replacing a gas cylinder tube see that it correctly fits the bracket and that the rear hole lines up properly in the receiver. The tube should never be twisted to secure a fit at this point. In case of necessity a reamer may be run through the rear hole to clean out a small amount of metal.

(2) The ports of the gas cylinder may become clogged to such an extent as to render the action uncertain, or burnt powder deposited on the inside of the gas cylinder, causing the piston to stick. The gas cylinder cleaning tool may be used to clean these parts. Failure to operate, due to insufficient gas, is sometimes the result of wrong assembling of the gas cylinder, screwing it in one turn from the shoulder. Unscrew

one-third of a turn to change to the medium port, and one-third of a turn farther to the large port. The relative sizes of the ports are indicated by circles on the front end of the cylinder. The threads of the gas cylinder should fit snugly enough to prevent excessive gas leakage. The fit of the gas cylinder and piston, although free, should not be excessively loose, in order that the recoil may be uniform. Extreme wear would necessitate replacement. In replacing a gas cylinder make sure that the piston works freely when the cylinder is set at each port. Test as described below.

(3) If the gas piston has become bent it may bind in the gas cylinder or tube. Slight bends may be straightened and tested in the following manner: Remove the trigger guard, bolt, and recoil spring. The piston and slide should work back and forth easily as the muzzle of the rifle is tilted first up and then down. Particular attention should be given at the point where the piston enters the cylinder. In replacing a piston, the new one should be tested in this manner. In the case of the old-type piston, which is threaded rigidly into the slide, slight bending may be necessary in order to secure the proper alignment.

c. Receiver.—Wear in the receiver usually occurs on the locking surface or on the bolt supports. The rear cam surface of the bolt supports must be accurately positioned in order to cam the bolt lock upward at the proper time. The bolt supports must fit tightly in the receiver and be well riveted. The hammer used in riveting should be heavy enough to swell the rivets throughout their entire length. An excessively loaded cartridge may spread the side of the receiver slightly and loosen the bolt supports. In this case the sides of the receiver should be carefully brought back into position, with the aid of a vise, and the bolt supports reriveted.

d. Firing mechanism.—(1) The slide should fit freely in the receiver and the sides should be straight. The slide should not be excessively loose in the receiver, as this may cause the hammer pin to batter the top of the front end of the slot in the left side of the receiver, rendering it difficult to pull back the operating handle when cocking the rifle. To remedy this difficulty the slot can be smoothed over and widened slightly by filing. Slight cracks may occur in the slide, extending from the hammer pin hole to the upper surface. This does not in general affect the operation of the rifle.

(2) The hammer should have a good bearing against the seat in the rear of the slide, and when assembled should not be loose enough to allow any appreciable tilting when pressure is exerted in the upper portion of the front face. In addition to this condition, excessive wear or deformation of the front face may be the cause of misfires. When the parts are in their forward position the hammer should clear the firing pin, but not by more than one thirty-second of an inch. The hammer should come up against the link when the gas cylinder tube is not in place. The recoil spring should not become set, and hence too short for positive operation. In some cases this can be corrected temporarily by pulling out the spring. In some cases replacements will be necessary. The recoil spring should be 15 inches long.

(3) In addition to the actual length of the firing pin the following points determine the distance which the firing pin will protrude through the bolt in the locked position (causing pierced primers at one extreme and misfires at the other) : The distance from the face of the hammer to its rear bearing surface against the slide, the distance from this surface to the front stop shoulder of the slide, the distance from the slide stop shoulder of the gas cylinder tube to the gas cylinder tube retaining pin hole, the distance from this hole to the face of the receiver, the distance from the face of the receiver to the locking surface, and the distance from the locking surface of the bolt lock to the front face of the bolt. Firing pin protrusion can only be gauged when the rifle is assembled and the bolt is in the locked position. It will be necessary to use a gauge extending from the muzzle of the gun or to take a wax impression of the projection when the bolt is locked.

(4) When the bolt is unlocked the bolt link should bear on the locking shoulder of the bolt lock and should hold the bolt lock up so that it just clears the bolt supports and guide as the bolt is moved rearward. Frequent blown or pierced primers may cause the rear head of the firing pin to batter the front of the bolt link. This battered surface should not be allowed to develop a sharp edge which might catch or break off the head of the firing pin.

(5) The top rear corner of the firing pin head should be well rounded to avoid the above-mentioned breakage. The shank of the firing pin should be straight and the point not excessively deformed or pitted. The retracting cam should be beveled on

each side, and neither this part nor the corresponding slot in the bolt lock should show battering or signs of misalignment.

(6) The bolt and bolt lock are an assembled unit and should never be separated. There should be a good bearing between the two so that none of the shock of the recoil is taken on the bolt lock pin. The bolt lock pin may become loose with wear until one end projects and catches on the inside of the receiver, resulting in stoppages and mutilation of the receiver. Test by pushing the pin both ways with the finger. It should not be possible to cause it to project on either side. In case of projection, rerivet the pin. Considerable wear on the locking shoulder of the bolt lock, in the joint between the bolt and bolt lock, or on the face of the bolt, may result in excessive head space, causing ruptured cartridges and, in some cases, blown primers. During the rearward motion the bolt lock should never bear to any appreciable extent on the bolt supports or guide. If the firing pin hole in the face of the bolt is enlarged or off center, the assembly should be replaced, as this is often the cause of breakage of firing pin points.

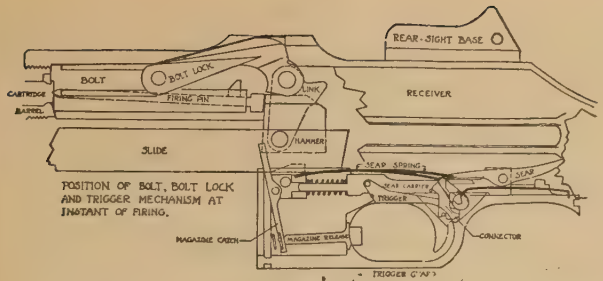
(7) When the gun is assembled without the recoil spring, but with the gas cylinder and gas-cylinder tube in place, the recoiling parts should slide back and forth freely as the gun is turned muzzle up and vice versa, unless the breeching is snug. In that case they should move freely when the bolt lock is disengaged from the recoil shoulder of the receiver. On the forward movement the bolt lock should be cammed up by the rounded rear ends of the bolt supports, but there should be sufficient clearance between the bolt supports and the locking shoulder of the receiver to prevent excessive binding. When in the locked position the front shoulder of the bolt should just clear the rear shoulder of the barrel. If the bolt comes up against the barrel but does not interfere with the locking of the bolt lock, the operation of the gun will not be affected unless dirt is allowed to accumulate in front of the bolt.

(8) The extractor should have particular attention to see that it has retained its proper shape and that the cartridge fits the hook correctly. The inner radius of the extractor hook should closely fit the bottom of the cannelure of the cartridge. The extractor notch just back of the hook should be deep enough to allow the extractor to come down into the cannelure, so that minimum cartridge will snap in and be held up firmly in place. Faulty ejection may result if the cartridge is allowed

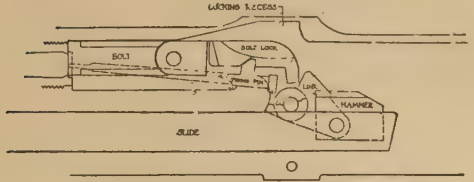
to drop even a short distance. To test this, remove the bolt and firing pin and insert a live cartridge under the extractor. It should be able to withstand considerable shaking without dropping down out of place. Examine to see if the extractor hook bears against the bottom of the cannelure at all points and that the base of the cartridge is held snugly against the face of the bolt. About 0.01 inch clearance between the base of the cartridge and the bolt face will not in general affect the operation of the rifle, but more than this may cause weak ejection. The lower corners of the extractor and lips of the bolt should be slightly rounded so as not to chip brass from the cartridges as they slip up into place. The rear face of the notch in the extractor, which bears against the lug of the bolt during extraction, should be slightly undercut, thus tending to prevent the extractor from slipping over the rim of the cartridge or from pulling out. The rear face of the extractor hook should be square and the extracting edges fairly sharp. An excessive amount of dirt under the extractor may result in failure to extract or failure to eject. The extractor should be a snug fit in the bolt. Side play or twisting is especially liable to cause trouble. Worn or defective extractors may often be corrected by proper and careful filing. The extractor spring rarely causes any trouble.

e. Trigger guard mechanism.—(1) The fit of the trigger guard in the receiver is not important except that it should be fairly snug sideways. The sear should be a loose fit in the sear carrier. The nose of the sear, as well as the sear notch in the slide, should be correct in shape in order to maintain positive engagement. The sear pin should carry the tension of the counterrecoil spring, leaving the trigger pin free. The trigger should be a loose fit in the trigger guard and the connector loose in the trigger. The trigger pull should be smooth and from 6 to 10 pounds. The change lever should work smoothly. The ideal condition in semiautomatic fire is for the cam on the connector to engage the sear carrier just at the moment the sear releases the slide. The sear spring should fit in the trigger guard without an excessive amount of slide play. The center leaf should have a smooth and continuous bearing against the bevel surface of the connector. The magazine catch should work freely and easily and should hold the magazine up closely to the bolt supports.

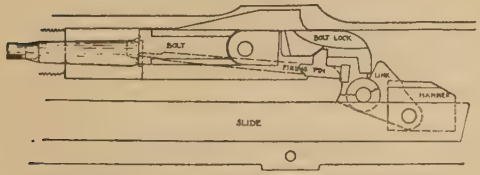
(2) The ejector should fit fairly close in the trigger-guard guides. An excessive amount of play forward and backward



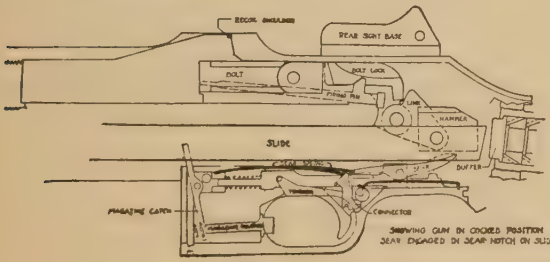
POSITION OF BOLT, BOLT LOCK AND TRIGGER MECHANISM AT INSTANT OF FIRING.



SHOWING UNLOCKING OF BOLT AND WITHDRAWAL OF FIRING PIN



SHOWING FURTHER MOTION OF RECOILING PORTIONS TO REAR AND EXTRACTION OF CARTRIDGE CASE



SHOWING GUN IN COCKED POSITION SEAR ENGAGED IN SEAR NOTCH ON SLIDE

may result in weak ejection. This can sometimes be corrected by bending the ejector slightly. The upper end of the ejector should spring slightly when pressed back. The location of the working end of the ejector for height and side position is of primary importance. To examine this, draw back the mechanism until the bolt face is even with the ejector. The ejector should fit up within $\frac{1}{32}$ inch of the bolt but should not bind. A poor fitting ejector can be corrected by bending until it fits up closely in the notch of the bolt. The upper part of the ejector should not bend rearward. If the ejection is correct the shells will be given a spinning motion as they leave the rifle and will be thrown diagonally forward with considerable force. Test the ejection with a magazine filled with dummies. First operate the rifle slowly by hand, which should result in positive ejection. Then operate rapidly, when the cartridge should be ejected with force.

f. Rear sight.—If the rear sight is properly assembled with a good driving fit it will give little trouble. If the sight works loose from the receiver it may be necessary to replace the sight base. It may, however, be possible to swell the dovetail of the rear sight base by light and careful peening with a hammer until the necessary drive fit is obtained.

g. Buffer assembly.—If properly assembled the buffer tube assembly will cause little or no difficulty. Special attention should be given to see that the buffer spring is always assembled behind the buffer friction cups and cones. The bronze buffer friction cups sometimes split and in this case should be replaced.

h. Magazines.—Magazines should fit easily in the receiver and should be free enough to drop out under their own weight when the magazine release is compressed. The form of the inturned lips is important. Cartridges should strip out smoothly and without excessive friction, which might hold back the bolt to such an extent as to cause failure to breech and misfires. The inside distance between the pressed-in ribs should be maintained within reasonable limits. The magazine follower should work freely. Deformed or battered magazines may be repaired by placing over the salvaging tools and bringing back into shape with a lead hammer.

76. *Automatic rifle inspection.*—Careful and frequent inspections should be made of the following:

a. Receiver and barrel.

(1) Tightness of flash hider and front sight.

(2) Condition of bore.
(3) Tightness and alignment of barrel.
(4) Burrs on receiver or any part.
(5) Position of bolt guide and spring.
(6) Tightness of buffer tube.
(7) Tightness of stock.

b. Rear sight.

(1) Firmness of rear-sight base.
(2) Free movement of slide.
(3) Condition of slide catch spring.

c. Gas cylinder and tube.

(1) Proper alignment of gas ports.
(2) Fouling of gas cylinder.
(3) Burrs.

d. Gas piston and slide.

(1) Fouling of piston.
(2) Sear notch for chips and burrs.
(3) Hammer pin for looseness. (Should be loose.)
(4) Length of recoil spring. (15 inches.)

e. Bolt group.

(1) Proper fitting of extractor.
(2) Security of bolt lock pin.
(3) Clearance for firing pin in face of bolt.
(4) Bolt and bolt lock for wear and burrs.
(5) Shoulder of firing pin to see that it is cammed easily and in alignment, by cut-out portion on underside of bolt lock.

f. Trigger guard group.

(1) Length and strength of sear spring.
(2) Wear and burrs on all parts.
(3) Verify presence of all springs.
(4) Worn magazine catch.

g. Magazine.

(1) Shape of magazine lips.
(2) Dirty or dented parts.
(3) Fitting of magazine in receiver.
(4) Wear in magazine catch notch.

h. After rifle is assembled, test for proper assembly and action, especially trigger mechanism, and piston in gas cylinder.

AUTOMATIC PISTOL, CALIBER .45, MODEL OF 1911

(T. R. 320–15)

	Paragraphs
SECTION I. General description	77
II. Mechanical operation	82
III. Care of the pistol	86

SECTION I

GENERAL DESCRIPTION

77. *Markings on exterior of pistol.*—The automatic pistols, caliber .45, model of 1911, in the military service are marked on the right side, "Model of 1911, U. S. Army"; on the left side, "United States Property." They are also marked with the serial number of the pistol.

78. *Detailed description.*—The three principal parts of the pistol are the receiver (1), barrel (2), and slide (3).

a. The *receiver* (1) has suitable guides for the reciprocating slide (3), and a hollow handle in which the magazine is inserted from below and locked in place by the magazine catch (48). The magazine may be removed by pressure upon the checkered end of the magazine catch (48), which projects from the left side of the receiver (1) in a convenient position for operation by the thumb.

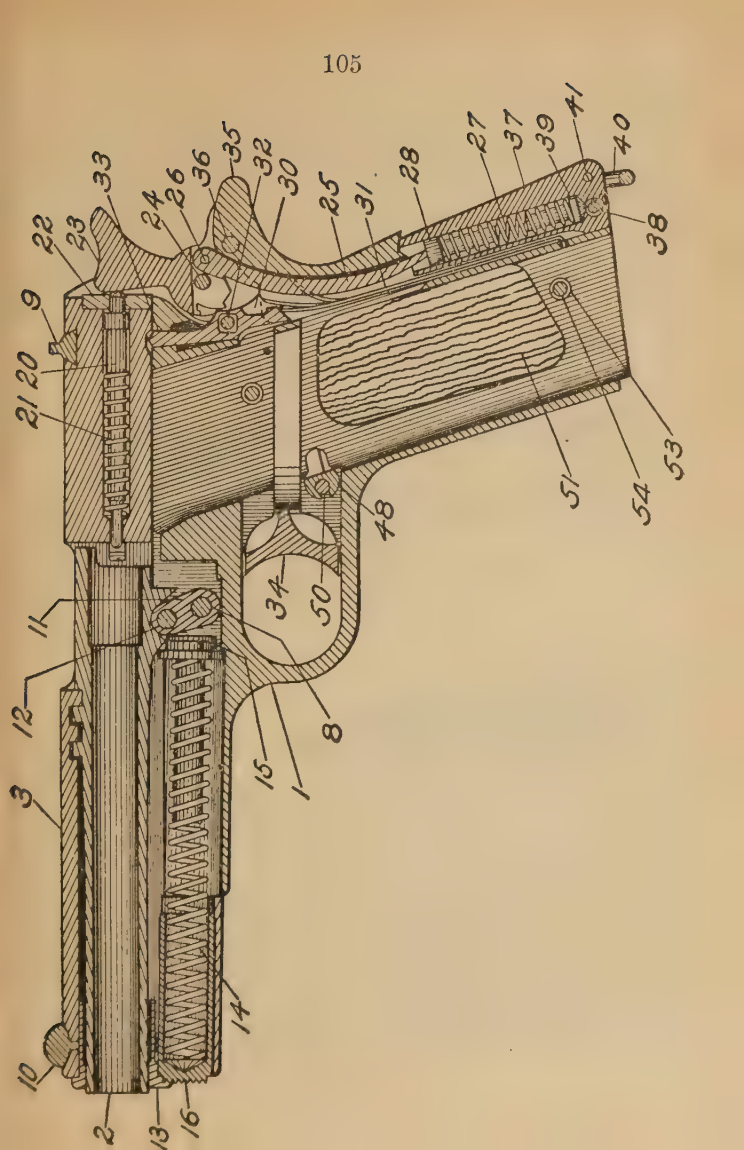
The *magazine catch* (48) engages with and locks the magazine under the pressure of the *magazine-catch swing* (49) and is held in the receiver (1) by means of the *magazine-catch lock* (50).

The magazine consists of a *magazine tube* (42) closed at the bottom by means of the *magazine base* (43) secured with two *magazine pins* (44).

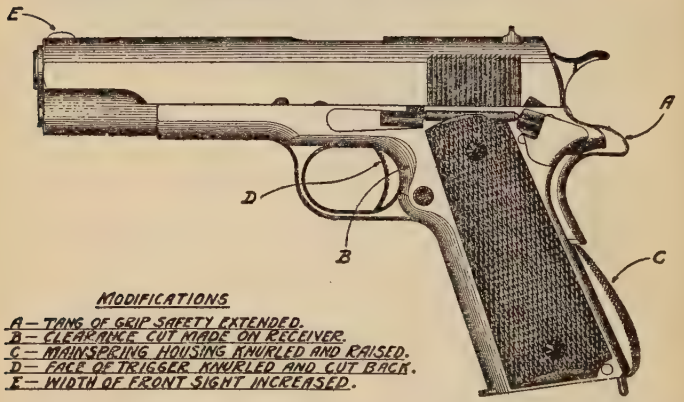
Within the magazine tube (42) is contained the *magazine spring* (46) exerting a pressure against the *magazine follower* (47), which serves as a movable platform for the cartridges.

Secured at each end of the handle of receiver (1) on both sides are *screw bushings* (53), to which are fitted the *stocks* (51) and (52) and into which, to secure the latter, are screwed the *stock screws* (54).

In front of the handle of receiver (1), in the trigger guard, is seated the *trigger* (34); in rear and above the handle the


10
2
13
16
14
3
12
11
15
1
8
34
50
48
51
54
53
9
21
20
22
23
33
24
26
36
35
32
30
25
31
28
27
37
39
41
40
38

firing mechanism is arranged, comprising the *hammer* (23), mounted on the *hammer pin* (24), the *sear* (30) and (automatic) disconnector (33), mounted together on the *sear pin* (32), the grip safety (35), and safety lock (36); also the mainspring (27), and the sear spring (31). The *mainspring* (27) is seated within the *mainspring housing* (37) and there held by the *mainspring-cap pin* (29). The mainspring housing (37) also contains the *mainspring cap* (28) and the *housing-pin retainer* (39). The conical point of the latter protrudes slightly into the hole for the *housing pin* (38), engaging with



the groove around the middle thereof, thereby holding the housing pin (38) in place. Into the base of the mainspring housing (37) is fitted the *lanyard loop* (40) secured by the *lanyard-loop pin* (41).

The *sear spring* (31) has a rib on its lower end which fits into a slot in the rear wall of the magazine seat and keeps the spring from moving vertically. The mainspring housing (37), bearing against the rear of the spring, locks it in position and gives to it the required tension. The *hammer strut* (25) is attached to the hammer (23) in rear of its pivot by means of the *hammer-strut pin* (26). Its lower end rests in the mainspring cap (28).

Above the handle on the left side are the *slide-stop plunger* (5) and *safety-lock plunger* (7) with their ends protruding from the front and rear, respectively, of the *plunger tube* (4). The *plunger spring* (6) is seated between the plungers (5 and 7) within the plunger tube (4) and yieldingly holds them in position.

The *ejector* (18) is seated at the top of the receiver (1) near the rear end at the left side. It is held in place by the *ejector pin* (19).

The top of the receiver (1) forward of the trigger guard has a semitubular extension which forms the seat for the rear portion of the recoil spring (14).

b. The barrel (2) of the pistol is the largest at the breech and at the top has two transverse locking ribs, the forward edges of which, together with the forward edge of the breech portion, serve to positively interlock the barrel (2) with the slide (3) when in the firing position. At its rear is an extension which facilitates the entrance of the cartridge from the magazine into the chamber. The rear end of the barrel (2) is attached to the receiver (1) by the *link* (11), *link pin* (12), and the pin of the slide stop (8), and swinging thereon can move a limited distance lengthwise and also in a vertical plane.

The side walls of the slide (3) overlap the sides of the receiver (1), and being provided with longitudinal ribs corresponding with similar grooves at the top of the receiver (1), the slide (3) is free to move longitudinally.

c. The *slide* (3) has at its front end a strong tubular abutment which is in line with the forward portion of the receiver (1), and which permits the slide (3) to move to the rear until the rear end of the abutment comes in contact with the flange of the recoil-spring guide (15) against the shoulder in the receiver (1) at its forward end, thereby positively limiting the rearward movement of the slide (3). The latter is therefore necessarily assembled to the receiver (1) from the front, and is prevented from being thrown rearward from the receiver (1) under any circumstances.

In the abutment at the front end of the slide (3) is seated the forward end of the *recoil spring* (14), fitted into the *plug* (16). The rear end of the recoil spring (14) fitted on the *recoil-spring guide* (15) rests against the shoulder in the front end of the receiver (1).

On the top of slide (3) are mounted the *front sight* (10) and *rear sight* (9).

The *barrel bushing* (13) fits into the front end of the slide (3), supports the muzzle end of the barrel (2), and holds the plugs (16) and recoil spring (14) in place.

When the slide (3) and the barrel (2) therein are mounted upon the receiver (1) and the slide stop (8) is in its place, so that the pin part of the slide stop (8) locks the barrel (2) to the receiver (1) through the link (11), the slide (3) is thereby positively locked in place upon the receiver (1).

The *firing pin* (20), *firing-pin spring* (21), and (shell) *extractor* (17) are carried in the rear end of the slide (3) and locked by the *firing-pin stop* (22). By pressing the firing pin (20) forward so as to clear the firing-pin stop (22), the latter is released and may be removed downwardly, leaving both firing pin (20) and extractor (17) free for removal.

The *slide stop* (8) consists of the pin part, which serves as a pivot and passes through the link (11), and a body, on which is a thumb piece for releasing the slide (3) from the open position.

The *safety lock* (36) consists of a thin plate, a projecting pin, a thumb piece, and a projecting stud. The pin part serves as a pivot for the safety lock (36) and is at the same time a pivot for the grip safety (35). The upper corner of the plate has an angle which will fit into a correspondingly shaped recess in the slide (3). When the slide (3) is in its forward position, and the hammer (23) is full cocked, the safety lock (36) may be pushed up manually, by means of the thumb piece, thereby positively locking the hammer and the slide. While the safety lock (36) is being pushed up into the locking position the stud on the safety lock (36) is being carried upward and it finally stands in rear of the lower arm of the sear (30), blocking the sear (30) and causing the locking of the hammer (23). If the safety lock (36) is pressed down so as to release the slide (3) the projecting stud on the safety lock (36) clears the sear (30), permitting the sear (30) to be operated by the trigger (34), thereby causing the release of the hammer (23) if the grip safety (35) is pressed inward, as by the hand grasping the handle of the pistol, and the trigger (34) is pulled.

The *grip safety* (35) is pivoted in the upper part of the receiver (1). Its lower part projects from the rear face of the handle under pressure of the short leaf of the sear spring (31), thereby locking the trigger whenever the handle of the pistol is released. But when the handle is grasped, as in the firing position, the grip safety (35) releases the trigger (34) without requiring the attention or thought of the firer.

The (automatic) *disconnector* (33) is mounted in the receiver (1) in the rear of the magazine seat. In the underside of the

slide (3), and near its rear end, a recess is provided which stands above the top of the disconnector (33) when the slide (3) is in the forward firing position. With the slide in this position the disconnector (33) is raised to its operative position by the center leaf of the sear spring (31) and it then will transmit the movement of the trigger (34) to the sear (30). The forward surfaces of the recess of the slide (3) and of the projecting end of the disconnector (33) are inclining, so that the rearward movement of the slide (3) depresses the disconnector (33) until the slide (3) again returns to its forward position. In this depressed position of the disconnector (33) the trigger (34) is disconnected from the sear (30), allowing the sear (30) to reengage the hammer (23). This arrangement automatically and positively prevents firing of the pistol except when all its parts are in the fully closed and locked firing position, and it also prevents more than one shot from following each pull of the trigger (34).

d. The pistol has been modified for future manufacture, the changes consisting of the following: The tang of the grip safety is to be extended to better protect the hand, a clearance cut is to be made on the receiver for the trigger finger, the face of the trigger is to be cut back and knurled, the mainspring housing is to be raised in the form of a curve to fit the palm of the hand, and it is also to be knurled, and the top of the front sight is to be widened.

79. *Miscellaneous data concerning the pistol.*

Weight, 2 pounds 7 ounces.
Trigger pull, 6 to 7½ pounds.
Total length, 8.593 inches.
Barrel:
Length, 5.025 inches.
Diameter of bore, 0.445 inch.
Rifling:
Grooves—.
Number, 6.
Width, 0.1522 inch.
Depth, 0 003 inch.
Lands, width, 0.072 inch.
Twist, one turn in 16 inches, left-handed.
Front sight above axis of bore, 0.5597 inch.

80. *Exterior ballistics.—a. Rapidity of fire.*—(1) This pistol has been fired 21 times in 12 seconds, beginning with pistol empty and loaded magazines on a table at side of operator.

(2) Firing at 25 yards distance at a target 6 feet by 2 feet under the same conditions as in (1), 21 shots were fired in 28 seconds, making 21 hits, with a mean radius of 5.85 inches.

(3) Firing 10 shots, using a muzzle rest at 25 yards distance, at a target 6 feet by 2 feet, a mean radius of dispersion of 0.855 inch has been obtained.

b. Accuracy with muzzle rest.

Range	Mean radius	Mean vertical deviation
Yards	*Inches*	*Inches*
25	0.85	0.62
50	1.36	.91
75	2.24	1.42

The above figures represent the mean variations for several targets.

c. The drift.—The drift or deviation due to the rifling is, in this pistol, to the left, but is more than neutralized by the pull of the trigger when the pistol is fired from the right hand. The drift is slight at short ranges and that for long ranges is immaterial, inasmuch as the pistol is a short-range weapon.

d. Velocity with striking energy.

Range	Velocity	Energy
Yards	*Feet per second*	*Foot-pounds*
0	802	329
25	788	317
50	773	305
75	758	294
100	744	283
125	730	272
150	717	262
175	704	253
200	691	244
225	678	235
250	666	226

e. Penetration in white pine.

Range	Depth
Yards	*Inches*
25	6.0
50	5.8
75	5.6
100	5.5
150	5.2
200	4.6
250	4.0

The penetration in moist loam at 25 yards is about 10 inches. The penetration in dry sand at 25 yards is about 8 inches.

f. Trajectory.—The elevation required for 100 yards is 24 minutes and for 200 yards about 1°. The elevation for 250 yards is about 1° 13 minutes; the maximum ordinate being approximately 130 yards distance from the muzzle and about 51 inches in height. The maximum range is around 1,600 yards at angles of 30°. The maximum ordinate for the maximum range is approximately 2,000 feet, the height varying with the angle of elevation.

81. *Ammunition for pistol.*—The components of the ball cartridge consist of cartridge case, primer, powder, and bullet.

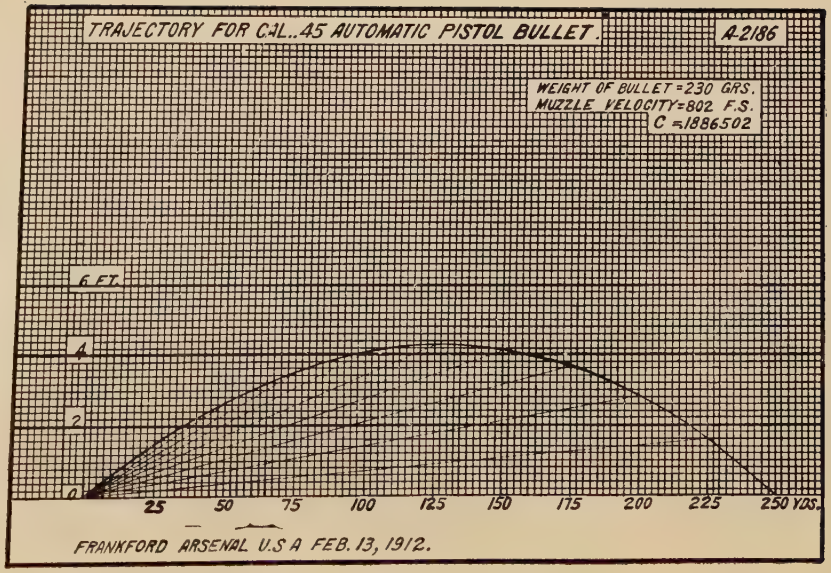
a. The *cartridge case* is cylindrical and is made of brass. It is provided with a cannelure to prevent the bullet being forced down on the powder.

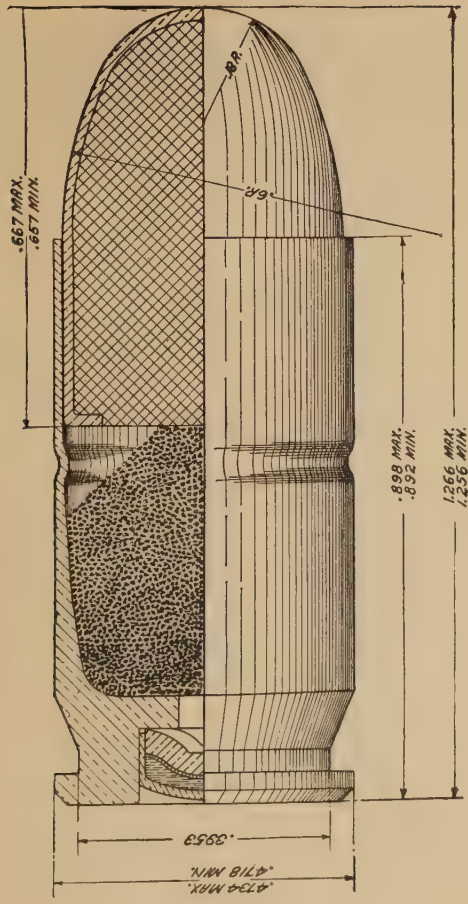
b. The *primer* consists of a cup which contains the primer composition, a paper disk, and an anvil which resists the blow of the firing pin. The anvil is provided with two vents by which the flame is communicated to the charge. Ignition is produced by crushing the composition between the cup and anvil by a blow of the firing pin.

c. The *powder* is a smokeless powder. The charge varies with the kind and lot, but it is generally about 5 grains.

d. Bullet.—The body of the bullet is a cylinder. The bullet has a core of lead and tin composition inclosed in a jacket of gilding metal or cupro-nickel. It weighs 230±2 grains.

	Inches
Length of bullet	0.662
Diameter of cylindrical part of bullet	.45015
Total length of cartridge	1.261


TRAJECTORY FOR CAL..45 AUTOMATIC PISTOL BULLET.
A-2186
WEIGHT OF BULLET = 230 GRS.
MUZZLE VELOCITY = 802 F.S.
C = 1886502
6 FT.
4
2
0
25
50
75
100
125
150
175
200
225
250 YDS.
FRANKFORD ARSENAL U.S.A FEB. 13, 1912.



Pistol ball cartridge, caliber .45, model of 1911

To render the cartridge waterproof the inside of the neck of the case and the outside of the primer are shellacked.

e. Packing.—The cartridges are packed in pasteboard boxes containing 20 cartridges each. One hundred pasteboard boxes, or 2,000 cartridges, are packed in one zinc case, hermetically sealed, with handle for tearing open. The whole is inclosed in a wooden box, the cover of which is fastened with screw hooks and thumb nuts and sealed.

	Pounds
Weight of 100 cartridges	4.6
Weight of 2,000 cartridges, packed	110

Section II

MECHANICAL OPERATION

82. *Method of operation.*—*a.* A loaded magazine is placed in the handle and the slide (3) drawn fully back and released, thus bringing the first cartridge into the chamber (if the slide is open, push down the slide stop (8) to let the slide (3) go forward). The hammer (23) is thus cocked and the pistol is ready for firing.

b. If it is desired to make the pistol ready for instant use and for firing with the least possible delay the maximum number of shots, draw back the slide (3), insert a cartridge by hand into the chamber of the barrel (2), allow the slide (3) to close, then lock the slide (3) and the cocked hammer (23) by pressing the safety lock (36) upward, and insert a loaded magazine. The slide (3) and hammer (23) being thus positively locked, the pistol may be carried safely at full cock, and it is only necessary to press down the safety lock (36) (which is located within easy reach of the thumb) when raising the piston to the firing position.

c. The grip safety (35) is provided with an extending horn, which not only serves as a guard to prevent the hand of the shooter from slipping upward and being struck or injured by the hammer (23), but also aids in accurate shooting by keeping the hand in the same position for each shot; and, furthermore, permits the lowering of the cocked hammer (23) with one hand by automatically pressing in the grip safety (35) when the hammer (23) is drawn slightly beyond the cocked position. In order to release the hamer (23), the grip safety (35) must be pressed in before the trigger (34) is pulled.

83. *Safety devices.—a.* It is impossible for the firing pin (20) to discharge or even touch the primer, except on receiving the full blow of the hammer (23).

b. The pistol is provided with two automatic safety devices:

(1) The (automatic) disconnector (33) which positively prevents the release of the hammer (23) unless the slide (3) and barrel (2) are in the forward position and safely interlocked; this device also controls the firing and prevents more than one shot from following each pull of the trigger (34).

(2) The (automatic) grip safety (35) at all times locks the trigger (34) unless the handle is firmly grasped and the grip safety (35) pressed in.

c. The pistol is in addition provided with a safety lock (36) by which the closed slide (3) and the cocked hammer (23) can be at will positively locked in position.

84. *Operation in detail.*—The magazine may be charged with any number of cartridges from one to seven.

The charged magazine is inserted in the handle and the slide (3) drawn once to the rear. This movement cocks the hammer (23), compresses the recoil spring (14), and, when the slide (3) reaches the rear position, the magazine follower (47) raises the upper cartridge into the path of the slide (3). The slide (3) is then released and, being forced forward by the recoil spring (14), carries the first cartridge into the chamber of the barrel (2). As the slide (3) approaches its forward position, it encounters the rear extension of the barrel (2) and forces the barrel forward; the rear end of the barrel (2) swings upward on the link (11), turning on the muzzle end as on a fulcrum. When the slide (3) and barrel (2) reach their forward position they are positively locked together by the locking ribs on the barrel (2) and their joint forward movement is arrested by the barrel lug encountering the pin on the slide stop (8).

The pistol is then ready for firing.

When the hammer (23) is cocked, the hammer strut (25) moves downward, compressing the mainspring (27), and the sear (30), under action of the long leaf of the sear spring (31), engages its nose in the notch on the hammer (23).

In order that the pistol may be fired, the following conditions must exist: The grip safety (35) must be pressed in, leaving the trigger (34) free to move; the slide (3) must be in its forward position, properly interlocked with the barrel (2), so that the disconnector (33) is held in the recess on the under-

side of the slide (3) under the action of the sear spring (31), transmitting in this position any motion of the trigger (34) to the sear (30); the safety lock (36) must be down, in the unlocked position, so that the sear (30) will be unblocked and free to release the hammer (23) and the slide will be free to move back.

On pulling the trigger (34), the sear (30) is moved and the released hammer (23) strikes the firing pin (20), which transmits the blow to the primer of the cartridge. The pressure of the gases generated in the barrel (2), by the explosion of the powder in the cartridge, is exerted in a forward direction against the bullet, driving it through the bore, and in a rearward direction against the face of the slide (3), driving the latter and the barrel (2) to the rear together. The downward swinging movement of the barrel (2) unlocks it from the slide (3), and the barrel (2) is then stopped in its lowest position. The slide (3) continues to move to the rear, opening the breech, cocking the hammer (23), extracting and ejecting the empty shell and compressing the recoil spring (14) until it—the slide (3)—reaches its rearmost position, when another cartridge is raised in front of it and forced into the chamber of the barrel (2) by the return movement of the slide (3) under pressure of the recoil spring (14).

The weight and consequently the inertia of the slide (3), augmented by those of the barrel (2), are so many times greater than the weight and inertia of the bullet that the latter has been given its maximum velocity and has been driven from the muzzle of the barrel (2) before the slide (3) and barrel (2) have recoiled to the point where the barrel (2) commences its unlocking movement. This construction, therefore, delays the opening of the breech of the barrel (2) until after the bullet has left the muzzle and therefore practically prevents the escape of any of the powder gases to the rear after the breech has been opened.

This factor of safety is further increased by the tension of the recoil spring (14) and mainspring (27), both of which oppose the rearward movement of the slide (3).

While the comparatively great weight of the slide (3) of this pistol insures safety against premature opening of the breech, it also insures operation of the pistol because, at the point of the rearward opening movement where the barrel (2) is unlocked and stopped, the heavy slide (3) has attained a mo-

mentum which is sufficient to carry it through its complete opening movement and makes the pistol ready for another shot.

When the magazine has been emptied, the pawl-shaped slide stop (8) will be raised by the magazine follower (47) under action of the magazine spring (46) into the front recess on the lower left side of the slide (3), thereby locking the slide (3) in the open position, and serving as an indicator to remind the shooter that the empty magazine must be replaced by a charged one before the firing can be continued.

Pressure upon the magazine catch (48) quickly releases the empty magazine from the handle and permits the insertion of a loaded magazine.

To release the slide (3) from the open position, it is only necessary to press upon the thumb piece of the slide stop (8) when the slide (3) will go forward to its closed position, carrying a cartridge from the previously inserted magazine into the barrel (2) and making the pistol ready for firing again.

85. *To dismount and assemble the pistol.—a.* Remove the magazine by pressing the magazine catch (48).

Press the plug (16) inward and turn the barrel bushing (13) to the right until the plug (16) and the end of the recoil spring (14) protrude from their seat, releasing the tension of the spring (14). As the plug (16) is allowed to protrude from its seat, the finger or thumb should be kept over it, so that it will not jump away and be lost or strike the operator. Draw the slide (3) rearward until the smaller rear recess in its lower left edge stands above the projection on the thumb piece of the slide stop (8); press gently against the end of the pin of the slide stop (8) which protrudes from the right side of the receiver (1) above the trigger guard and remove the slide stop (8).

This releases the link (11), allowing the barrel (2), with the link (11) and the slide (3), to be drawn forward together from the receiver (1), carrying with them the barrel bushing (13), recoil spring (14), plug (16), and recoil-spring guide (15).

Remove these parts from the slide (3) by withdrawing the recoil-spring guide (15) from the rear of the recoil spring (14), and drawing the plug (16) and the recoil spring (14) forward from the slide (3). Turn plug (16) to right to remove from recoil spring (14). Turn the barrel bushing (13) to the left until it may be drawn forward from the slide (3). This releases the barrel (2), which, with the link (11), may be

drawn forward from the slide (3), and by pushing out the link pin (12) the link (11) is released from the barrel (2).

Press the rear end of the firing pin (20) forward until it clears the firing-pin stop (22), which is then drawn downward from its seat in the slide (3); the firing pin (20), firing-pin spring (21), and extractor (17) are then removed from the rear of the slide (3).

The safety lock (36) is readily withdrawn from the receiver (1) by cocking the hammer (23) and pushing from the right on the pin part or pulling outward on the thumb piece of the safety lock (36) when it is midway between its upper and lower positions. The cocked hammer (23) is then lowered and removed after removing the hammer pin (24) from the left side of the receiver (1). The housing pin (38) is then pushed out from the right side of the receiver (1), which allows the mainspring housing (37) to be withdrawn downward and the grip safety (35) rearward from the handle. The sear spring (31) may then be removed. By pushing out the sear pin (32) from the right to the left side of the receiver (1), the sear (30) and the disconnector (33) are released.

To remove the mainspring (27), mainspring cap (28), and housing-pin retainer (39) from the mainspring housing (37), compress the mainspring (27) and push out the small mainspring-cap pin (29).

To remove the magazine catch (48) from the receiver (1), its checkered left end must be pressed inward, when the right end of the magazine catch (48) will project so far from the right side of the receiver (1) that it may be rotated one half turn. This movement will release the magazine-catch lock (50) from its seat in the receiver (1), when the magazine catch (48), the magazine-catch lock (50), and the magazine-catch spring (49) may be removed.

With the improved design of magazine-catch lock (50) the operation of dismounting the magazine catch (48) is simplified in that when the magazine catch (48) has been pressed inward the magazine-catch lock (50) is turned by means of a screw driver or the short leaf of the sear spring (31) a quarter turn to the left when the magazine catch (48) with its contents can be removed. The improved design will be recognized from the fact that the head of the magazine-catch lock (50) is slotted.

The trigger (34) can then be removed rearwardly from the receiver (1).

The hammer strut (25) or the long arm of the screw driver can be used to push out all the pins except the mainspring-cap pin (29) lanyard-loop pin (41), and ejector pin (19).

b. To assemble the pistol, proceed in the reverse order.

It should be noted that the disconnector (33) and sear (30) are assembled as follows: Place the cylindrical part of the disconnector (33) in its hole in the receiver (1) with the flat face of the lower part of the disconnector (33) resting against the yoke of the trigger (34). Then place the sear (30), lugs downward, so that it straddles the disconnector (33). The sear pin (32) is then inserted in place, so that it passes through both the disconnector (33) and the sear (30).

The sear (30), disconnector (33), and hammer (23) being in place and the hammer (23) down, to replace the sear spring (31), locate its lower end in the cut in the receiver (1), with the end of the long leaf resting on the sear (30); then insert the mainspring housing (37) until its lower end projects below the frame about one-eighth of an inch, replace the grip safety (35), cock the hammer (23), and replace the safety lock (36); then lower the cocked hammer (23), push the mainspring housing (37) home and insert the housing pin (38).

In assembling the safety lock (36) to the receiver (1) use the tip of the magazine follower (47) or the screw driver to press the safety-lock plunger (7) home, thus allowing the seating of the safety lock (36). It should be remembered that when assembling the safety lock (36) the hammer (23) must be cocked.

When replacing the slide (3) and barrel (2) on the receiver (1), care must be taken that the link (11) is tilted forward as far as possible and that the link pin (12) is in place.

Section III

CARE OF THE PISTOL

86. *Reference.*—Directions for care and cleaning the piece follow in paragraphs 88 to 98. Every man to whom the piece is issued must be held personally responsible that it is in serviceable condition at all times. Only by careful observance of the instructions can proper care be exercised. It is therefore the distinct responsibility of the company commander that his men are first adequately instructed in this important matter before he can justly hold them accountable. Additional directions, applicable to care of the pistol only, follow.

87. *Important points.—a.* The pistol kept in a leather holster may rust, due to moisture absorbed by the leather from the atmosphere, even though the holster may appear to be perfectly dry. If the holster is wet and the pistol must be carried therein, cover the pistol with a thick coat of oil.

b. It is not necessary to remove the stocks in dismounting the pistol.

c. The hammer should not be snapped when the pistol is partially dismounted.

d. Never use a hammer in dismounting or assembling the pistol.

e. Care must be exercised to see that the disconnecter of the pistol is properly assembled to the sear.

f. In assembling, the hammer pin and sear pin are inserted from the left side.

g. Never place the trigger finger within the trigger guard until it is intended to fire and the pistol is pointed toward the target.

h. Do not carry the pistol in the holster with the hammer cocked and safety lock on, except in an emergency.

If the pistol is so carried in the holster, cocked and safety lock on, the butt of the pistol should be rotated away from the body when withdrawing the pistol from the holster, in order to avoid displacing the safety lock.

i. The trigger should be pulled with the forefinger. If the trigger is pulled with the second finger, the forefinger extending along the side of the receiver is apt to press against the projecting pin of the slide stop and cause a jam when the slide recoils.

j. Care must be exercised in inserting the magazine to insure its engaging with the magazine catch.

k. Pressure must be entirely relieved from the trigger after each shot in order that the trigger may reengage with the sear.

l. To remove cartridges not fired disengage the magazine slightly and then extract the cartridge in the barrel by drawing back the slide.

m. Magazine: Reasonable care should be taken to see that the magazine is not dented or otherwise damaged.

n. Never insert the magazine and strike it smartly with the hand to force it home, as this may spring the base or the inturning lips at the top. It should be inserted by a quick continuous movement.

Cleaning kit.—For cleaning, dismounting, and assembling the pistol a kit is issued consisting of a metal box containing the following articles:

10 screw drivers.
10 cleaning rods, brass (made so that either a cloth wiper or bristle brush can be used).
10 thong brushes.
1 oil can.
1 grease pot for cosmic.

The above articles, with the exception of the oil can and grease pot for cosmic, are also supplied as part of the contents of the arm repair chest, model of 1910, when this chest is issued to organizations equipped with the pistol. The cleaning kit will therefore be issued only to organizations equipped with the pistol and not provided with an arm repair chest.

CARE AND CLEANING OF WEAPONS

88. *General.*—The importance of a thorough knowledge of how to care for and clean the weapon with which armed can not be overemphasized. The kind of attention given determines largely whether or not it will shoot accurately and function successfully when needed. The bore and chamber must be kept in perfect condition for accurate shooting. It is also important that the receiver and moving parts of the rifle, the gas system and operating mechanism of the automatic rifle, and the mechanism of the automatic pistol be kept clean, lubricated, and in perfect condition for efficient functioning. The chamber is frequently neglected because it is not readily inspected. Care should be taken to see that it is cleaned as thoroughly as the bore. A roughened chamber delays greatly the rapidity of fire, and not infrequently causes shells to stick.

If the bore for a length of 6 inches at the muzzle is perfect, a minor injury near the chamber will have little effect on the accuracy of the rifle. Weapons should be cleaned as soon as the firing for the day is completed. The fouling is easier to remove then, and if left longer it will corrode the barrel. A cleaning rack should be provided for cleaning the rifle.

89. *The first step in cleaning is, for—*

a. The rifle, to remove the bolt.

b. The automatic rifle, to strip it as in field stripping and remove the gas cylinder from the gas cylinder tube.

c. The automatic pistol, to remove the slide from the receiver and the barrel from the slide.

90. *Action of primer and powder gases.*—It has been thought heretofore that corrosion in the bore of small arms might be due to the action of gas actually squeezed into the pores of the metal. Investigation has shown that this is not the case. The bore of a small arm under the action of the pressure and heat of the burning powder gases is hardened in a manner similar to that which forms the so-called casehardened surface on steel. Under the further action of heat, pressure, and abrasion the hardened surface becomes covered with minute cracks. These cracks normally follow the tool marks and are of very

small size. They extend, however, from the surfac of the bore to depths approximating a maximum of 0.0015 of an inch. These minute cracks accumulate fouling, which is difficult to remove by merely wiping, and a bore on superficial cleaning might appear to be in perfect condition and yet might subsequently rust from the action of fouling and moisture remaining in these cracks. The firing of a ball cartridge deposits in the bore the products of combustion of the powder and primer, together with plating or smears of metal from the jacket of the bullet. The combustion of the powder, being very complete, usually leaves a fouling which consists of an almost harmless ash. The combustion of the primer mixture, however, results in the deposit of a salt known as potassium chloride, akin to common table salt. This salt is deposited all over the surface of the bore and in all cracks and tool marks. It also extends to the chamber, the bolt mechanism of the rifle, the gas system of the automatic rifle, and the firing mechanism of the automatic pistol. When first deposited it is harmless, but like common table salt it quickly absorbs moisture from the air. Particularly, it absorbs moisture as soon as the humidity has increased after nightfall. Steel rusts very quickly when covered with wet salt. This salt, like common table salt, is not dissolved and is very little affected by oil or by any solution or solvents containing oil and will continue to absorb moisture even when saturated with oil. It is, however, readily dissolved in water or in solutions containing water, just as table salt may be thus dissolved. The proper method of cleaning is therefore to dissolve all of this salt from the surfaces with which it comes in contact by using water or solutions containing water, then to dry the parts thoroughly, and finally to protect these parts and surfaces with a film of oil or grease.

The above facts should be explained to the soldier, and he should be made to understand that the application of oils or solutions containing oil, without first removing this salt, is of no value in keeping the weapon in serviceable condition.

91. *Methods of ordinary cleaning after firing.*—Place the muzzle of the rifle or pistol in a vessel containing hot water and issue soap, sal-soda solution, hot water alone, or, in the absence of these, cold water. Use the cleaning rod with flannel patch inserted through the slotted end. Insert cleaning rod in the bore from the breech and pump water back and forth through the bore for about 1 minute. To clean the automatic rifle use the cleaning rod with the patch, as for the rifle, satu-

rated with the solution, and cleaning from the muzzle. Be careful not to let the cleaning rod come in contact with the muzzle or bore. While the bore is wet a brass or bronze-wire brush, if available, should be run through the bore, all the way through, then all the way back, three or four times. Water should then again be pumped through the bore. Then wipe the cleaning rod dry and, using dry, clean flannel patches, thoroughly swab the bore until it is perfectly dry and clean, using care to see that the chamber is also dried and cleaned, using flannel on a stick or chamber-cleaning brush. Then make the examination for metal fouling as described in the following paragraph. If no metal fouling be present, finally saturate a clean flannel patch with lubricating oil (Q. M. specification No. 2–27) and swab the bore and chamber with the patch, finally drawing the patch smoothly through the bore and chamber, allowing the cleaning rod to turn with the rifling. The cleaning rod should always be used from the breech, except in the automatic rifle, where the construction of the receiver prevents, care being taken not to rub or abrade the muzzle. This cleaning should be given in the above manner not later than the evening of the day on which the weapon is fired. It is desirable to examine the bore within 48 hours of this cleaning and, if necessary, clean again in the same manner. All oil should be wiped from the bore and chamber before firing. Particularly the piece should never be fired if the bore contains cosmic, referred to as rust-preventing compound (Q. M. specification 2–53), as very excessive pressure may result, or the barrel may even burst. If a brass-wire brush be not available, the sal-soda solution should always be used to clean the bore, as this solution tends to loosen up the fouling and to remove a slight stickiness which in the absence of the brass-wire brush might prevent the dissolving of all of the primer fouling by the water. To prepare the sal-soda solution take 1 pint of water, preferably hot, and add 4 heaping spoonfuls of sal soda. Soda ash may be substituted for the sal soda, 6 parts of soda ash being equivalent to 16 parts of sal soda. When the season's firing is completed the bores of all barrels should be cleaned with the standard metal-fouling solution as described below, and the bores should be protected with heavy coatings of cosmic instead of lubricating oil.

92. *Removal of metal fouling.*—After the bore has been cleaned and dried as above, and before it has been oiled, it should be examined to see if it contains metal fouling. Hold

the butt of the rifle pointed toward the sky and examine the bore from the muzzle; eye about 8 inches from the muzzle. Insert a piece of white paper in ejection opening of the receiver of the automatic rifle, at an angle of 45°, and hold it toward the light. If small smears, flakes, or lumps are seen on the surface of the bore near the muzzle, or for about 6 inches down from the muzzle, looking like dull lead, this is metal fouling. It occurs less frequently in the automatic pistol than in the rifles. Metal fouling should be removed at once, for not only is it detrimental to accuracy but it is conducive to the formation of rust in those portions of the barrel in which patches of metal fouling have become superimposed upon deposits of powder fouling containing potassium chloride. To remove metal foulding proceed as follows: The bore should be free from primer and powder fouling, and the barrel should be cold. Place a cord in the chamber so as to seal the bore at that point. Plug the gas port of the automatic rifle with a small wooden plug. Place a 2-inch section of rubber tube over the muzzle of the rifle or pistol so that about an inch of the tube extends above the muzzle. Stand muzzle up. Carefully pour the standard metal-fouling solution into the bore from the muzzle until the solution rises in the rubber tube or the flash hider of the automatic rifle, completely covering the muzzle. Place a few drops of oil on the solution in the automatic rifle to prevent the ammonia from evaporating and rusting the flash hider. If any solution is spilled on the exterior of the barrel, wipe it off at once. The solution should be permitted to remain in the bore from 15 to 20 minutes; never longer than 30 minutes under any circumstances. The solution should never be used in a hot barrel. Then pour the solution out of the bore, remove the cork from the chamber, the rubber tube from the muzzle, and plug from gas port, allow any remaining solution to drain out, and at once pump through the bore sal-soda solution (or one of its substitutes) in order to remove all traces of the metal-fouling solution as well as the deposits of powder fouling uncovered by the removal of the metal fouling. The flash hider of the automatic rifle should be removed and it and its threads on the barrel cleaned of all traces of ammonia solution. Finally, dry the bore and apply oil or grease as prescribed for regular cleaning. The ammonia solution dissolves the metal fouling. When tracer ammunition has been used it may be necessary to apply the

solution three or four times to remove the large amount of metal fouling deposited.

The standard metal fouling solution is prepared as follows:

Ammonium persulphate: 1 ounce, or 2 medium heaping spoonfuls.

Ammonium carbonate: 200 grains, or 1 medium heaping spoonful.

Ammonia, 28 per cent: 6 ounces, or ⅜ pint, or 12 spoonfuls.

Water: 4 ounces, or ¼ pint, or 8 spoonfuls.

The spoon referred to is the model of 1910 spoon issued in the mess kit. Powder the persulphate and carbonate together, place inside a clean cloth, and grind with tool handle; dissolve in the water and ammonia; mix thoroughly until about 90 per cent of the powder is dissolved, then use at once or bottle for future use. It should be kept in strong bottles tightly corked with rubber cork and in a cool place. In order to preserve the strength of the solution the bottle should be opened only for the time necessary to pour out the amount required. The solution, when mixed, should be used within 30 days. The above amount is sufficient to clean about six rifle barrels. The solution should not be used more than twice, and used solution should not be mixed with unused solution, but should be bottled separately. Care should be used in mixing and using this solution to prevent injury to the rifle. It should never be used in a warm barrel. Fresh solution has no effect on steel if the steel be kept continually wet or immersed for not more than 30 minutes. If the solution be allowed to evaporate on steel, the latter will rust very quickly. An experienced noncommissioned officer should mix the solution and superintend its use. When new type ammunition containing bullets jacketed with copper (gilding metal) is used, the ammonia swabbing solution will usually suffice to remove the slight, thin plating of copper on the surface of the bore which sometimes occurs with such ammunition. After the bore has been cleaned with one of the water solutions, as recommended in subparagraph 91, wet a number of cut flannel patches with the ammonia swabbing solution and swab the bore with these, generally for about five minutes, or until the patches no longer show a blue color. Then swab again with water and dry and oil the bore. Ammonia swabbing solution may be made by mixing 1½ parts of 28 per cent ammonia to 1 part of water. Or a stronger solution may be made by taking ammonium persulphate, 60 grains, or ½ spoonful smoothed off; ammonia, 28 per cent, 6

ounces, or 12 spoonfuls; and water, 4 ounces, or 8 spoonfuls. Dissolve the ammonium persulphate in the water and add the ammonia. Keep in a tightly corked bottle, pour out only what is necessary at the time, and keep the bottle corked. The ammonia swabbing solution will have little effect on the heavy, lumpy metal fouling which sometimes occurs when the older bullets jacketed with supro-nickel are used, and is intended for use when the newer ammunition loaded with bullets jacketed with copper (gilding metal) is used.

93. *Cleaning and care of remainder of rifle.*—The receiver should be wiped clean, care being taken to remove all dirt and lint. If gas escapes at the base of the cartridge it will probably enter the well of the bolt through the striker hole. In this case the bolt mechanism must be dismounted and the parts and well of the bolt thoroughly cleaned. Before assembling the bolt mechanism the firing pin, the barrel of the sleeve, the body of striker, the well of the bolt, and all cams should be wiped with an oiled rag. Many of the parts can generally be cleaned with dry rags. All parts after cleaning should be wiped with an oiled rag. The best method of applying oil is to rub with a piece of cotton cloth upon which a few drops of oil have been placed, thereby avoiding the use of an unnecessary amount of oil; this method will, even in the absence of the oiler, serve for the cams and bearings, which should be kept continually oiled. Ordinarily the stock and forearm need only be wiped dry and then wiped with an oily rag. About once a month or oftener, and always after the stock and forearm have become wet with water or perspiration, they should be thoroughly rubbed with a little linseed oil in the palm of the hand. Rub the oil well in until dry.

94. *Cleaning and care of remainder of the automatic rifle.—a. Cleaning the chamber.* During the firing a certain amount of oil and dirt accumulates in the chamber, where the heat forms it into a hard coating akin to carbon on the walls of the chamber. This coating is easily removed with the automatic rifle cleaning brush while the chamber is hot, but is difficult to remove after it hardens upon cooling. If not removed, cartridges stick in the chamber, resulting in failure to extract. The automatic rifleman should be trained to use the cleaning brush immediately upon cessation of firing, even if this cessation is only for a few minutes. The cleaning brush is introduced through the ejection opening in the receiver, and should be used vigorously. Upon final completion of firing, the brush

having been used, the chamber is further cleaned in the process of cleaning the bore, care being taken that water does not remain in the chamber, and that finally the chamber be wiped dry with a patch wrapped around the forward portion of the cleaning brush, and finally lightly oiled in the same manner.

b. Cleaning the gas system.—The gas system consists of the gas cylinder, gas-cylinder tube, piston, and the included gas ports. All of these are subjected to primer and powder fouling to the same extent as the bore and also receive carbon deposits from the burning of oil. To clean these parts of powder and primer fouling, wipe and scour them thoroughly with rags or patches wet with soap and hot water, or with hot water only with the aid of the gas-cylinder tool. Then using dry rags or patches thoroughly dry the parts. Scrape off any carbon deposits remaining with the gas tool, and wipe clean and dry again. Then oil the parts with a thin film of lubricating oil (Q. M. specification No. 2–27), applied with a clean rag or patch. Do not use an oil can or lubricate excessively. This is sufficient lubrication for these parts. Excessive oil produces excessive carbon and dirt that cause friction.

c. Breech mechanism.—This refers to the receiver and all parts contained therein. These parts should be wiped with oily rags, and then with a clean dry rag so as to render thoroughly clean and dry. They should then be wiped with a clean rag slightly saturated with lubricating (sperm) oil (Q. M. specification No. 2–27), so as to give to each part a thin film of light oil. This is sufficient for perfect lubrication. Excessive oiling, as with an oil can, is a waste of oil, and results in a collection of dirt which causes friction.

d. Magazines.—Magazines should be stripped, wiped clean and dry, and thinly coated with oil as described for the breech mechanism. Much dirt gets into them through careless handling on the ground during range or other firing. They must be kept free from dirt and rust which hinder their operation by making the spring and follower stick. Care must be exercised in the handling of magazines to avoid denting or bending them.

e. Exterior and stock.—Clean, dry, and lightly oil all metal parts. Wipe all dirt out of screw heads and crevices with small brush or match stick. If the rifle is to be placed in the arms rack after cleaning, the soldier should avoid touching the oiled metal parts with the hand, as perspiration is a great promoter of rust. Ordinarily the stock and forearm need only be wiped dry and then wiped with an oily rag. About once a month or

oftener, and always after the stock and forearm have become wet with water or perspiration, they should be thoroughly rubbed with a little linseed oil in the palm of the hand. Rub the oil well in until dry. An old toothbrush may be used on the checked portion of the forearm. Before firing all oil should be removed from the exterior of the barrel in order to prevent smoking when the barrel becomes hot.

95. *Cleaning and care of remainder of the automatic pistol.*—The provisions of the next preceding paragraph apply also to the automatic pistol in so far as the difference in mechanism permits.

96. *Important points.*—*a.* After firing the piece, never leave it uncleaned over night. The damage done is then irreparable.

b. Keep the piece clean and lightly lubricated, but do not let it become gummy with oil.

c. Do not place the piece on the ground where sand or dirt may enter the bore or mechanism.

d. Do not plug the muzzle of the piece with a patch or plug; you may forget to remove it before firing, in which case the discharge may bulge or burst the barrel at the muzzle.

97. *Preparation for storage and shipment.*—When weapons are stored, even for a short period, or when they are to be shipped, either by rail or water, they should be cleaned and prepared with particular care. The bore of all barrels should invariably be cleaned with the standard metal-fouling solution, after which the bore should be thoroughly washed with water to insure that all traces of the solution are removed, then dried. All parts of the weapon should be cleaned and then dried perfectly dry with rags. In damp climates particular care must be taken to see that the rags are dry. After drying a part, the bare hands should not touch that part; handle with an oily rag. All metal parts should then be heavily coated with cosmic, referred to as rust-preventing compound semi-solid (Q. M. specification No. 2–53). The cosmic should be warmed slightly and applied with a brush. The bore of barrels should be plugged and poured full of cosmic, the surplus poured out, the plug removed, and bore allowed to drain. Then, handling the weapon with oiled rags, it should be placed in the box, the wooden supports having previously been painted with cosmic.

98. *Issuing from storage.*—When issued from storage weapons are normally found completely coated with heavy grease (cosmic). Grease may be removed by the use of gasoline or

kerosene, as may be convenient, or may be wiped from the parts with a cloth. In all cases where gasoline or kerosene is used for cleaning purposes, care should be taken to see that they are completely removed from the parts by wiping, washing with soap and water, and drying. Under no circumstances should the assembled weapon be immersed in or saturated with gasoline or kerosene. These agents should be used sparingly and should not be allowed to soak into the stock. The stock, when manufactured, is dipped in oil, to the point of saturation. Gasoline or kerosene will remove this oil and allow the stock to absorb moisture, which will cause warping and consequent inaccuracy. All surfaces having been wiped clean, they should then be protected with a thin film of lubricating oil applied with a rag. It is particularly important that all moving surfaces be lightly oiled. Gasoline or kerosene cleaning leaves surfaces so thoroughly free of lubricant that operation is extremely difficult. Particular care must be taken to see that all grease is removed from the bore and chamber of barrels before firing, as grease in these parts may cause high and dangerous breach pressure, or the barrel may even burst on firing if it be filled with heavy grease.

MARKSMANSHIP

RIFLE—GENERAL

(T. R. 150–10)

		Paragraphs
SECTION I.	General provisions	99
II.	Personnel to fire—Courses to be fired—Qualification	109
III.	Insignia	116
IV.	General principles governing target practice	119
V.	Procedure governing record practice	126
VI.	Rules governing record practice	135
VII.	Records and reports	158
VIII.	Competitions	161
IX.	Targets and ranges	178
X.	Advice to officers in charge of rifle instruction	181

SECTION I

GENERAL PROVISIONS

99. *Scope.*—These regulations prescribe rules and regulations applicable to the general subject of rifle marksmanship.

100. *Object.*—The object of these regulations is to provide a thorough and uniform system of conducting rifle training throughout the military service.

101. *Duties of higher commanders.—a. The corps area or department commander.*—(1) Provides complete facilities for rifle instruction at or near each post within his corps area or department.

(2) Supervises the instruction in rifle training of the troops within his corps area or department.

(3) Satisfies himself that the principles governing rifle training are fully understood and carried out according to regulations.

b. The post commander.—(1) Exercises general supervision over the rifle training of all the troops within his post.

(2) Exercises direct supervision over the rifle training of the troops of his own tactical unit.

(3) Satisfies himself that the approved programs of rifle training are complied with faithfully.

(4) Requires that all men on special duty who are required to fire be given as much preparatory instruction and range practice as are given other men.

c. The regimental commander.—(1) Exercises direct supervision over the rifle training of his command.

(2) When he considers it necessary, appoints a well-qualified officer as officer in charge of rifle instruction.

(3) Submits reports through channels to the corps area or department commander. In these reports he shows the results obtained in rifle-practice and gives reasons, if any, for the failure of any organization of his command to attain the minimum standard of proficiency.

102. *Regular practice season.—a.* The period of the regular practice season is designated by the corps area or department commander upon the recommendation of the post commander. It is usually ordered as early in the year as weather and climatic conditions will permit of efficient instruction.

b. Under ordinary conditions the regular practice season for the Regular Army will cover a period of 6 weeks for each organization. A period of not more than 2 weeks is devoted to preparatory exercises and 4 weeks to range practice. When unforeseen circumstances are such as to cause a delay during the period of instruction the time may be extended by the post commander.

c. During the period designated as the regular practice season, known-distance firing will be carried on. Although record firing should take place on favorable days and under the most favorable circumstances, the men will have practice under variable conditions of weather. Care should be taken that the shooting is not held under such adverse conditions as to make the firing unprofitable.

d. Organizations actually firing will normally be excused from all post duties during the regular practice season, those duties being performed by the remainder of the garrison.

e. All range work will be performed by the troops firing, except that during record practice such officers as may be required for duty in the pit will be detailed from troops not firing.

f. The regular practice season for units of the National Guard and the Organized Reserves will be of such duration and ordered at such times as may be best suited for effective training.

g. When, because of an emergency, the time for all training is necessarily short, the period devoted to rifle practice may have to be reduced to 4 weeks, or even 2 weeks. Under no conditions will any man be given range practice until he has had a thorough course in the preparatory exercises.

103. *Supplementary practice season.*—*a.* The supplementary practice season is designated by the post or regimental commander when in his opinion such practice is desirable. Supplementary practice is not necessary when the regular practice season has been efficiently conducted except in cases where a large number of unqualified men join the organization after the regular practice season. The supplementary practice season is usually placed as late in the fall as is consistent with efficient instruction. It covers a period of from two to four weeks. However, this practice may be held at any time when circumstances make it advisable.

b. All persons required by regulations to fire, who for any reason failed to fire during the regular season's practice, or who joined after the beginning of the regular season's range practice and too late to participate therein with proper preliminary instruction, will fire during the supplementary season provided such season is held.

c. All persons below the grade of expert riflemen, who are authorized to fire, may fire for instruction during the supplementary season's practice, provided that the necessary ammunition is available.

d. Subject to ammunition allowances, all persons who have not fired for record during the calendar year may qualify during the supplementary season under the rules governing record practice.

104. *Continuous practice.*—Rifle practice is not limited to a particular season. Subject to ammunition allowances, com-

manding officers will adopt such measures as may be necessary to maintain a high state of excellence in rifle firing throughout the year. The particular measures adopted will depend upon the facilities near the post or station. The measures taken may provide for competitions between individuals or organizations or the encouragment of small-bore rifle teams.

105. *Recruit instruction.*—As soon as recruits are issued rifles they will be given the necessary instruction in simple nomenclature, safety precautions, care of the rifle, sighting, positions, trigger squeeze, bolt operation, and rapid-fire exercises in order to insure their ability to simulate fire properly in drills and field exercises. Usually 10 hours is time enough for this phase of instruction.

106. *Individual classification of riflemen.*—*a.* Riflemen are classified as expert riflemen, sharpshooters, marksmen, and unqualified men according to the proficiency exhibited in record practice.

b. The unqualified class includes all persons on the rolls of an organization at the close of the regular practice season who fired a record course and failed to qualify as marksmen or better, and all those who for any reason did not fire.

107. *Minimum standard of proficiency.*—In order to be classed as proficient in rifle training, every company, troop, or like organization must qualify as marksman or better at least 80 per cent of all persons who fired the course during the regular season's practice.

108. *Apparatus.*—The use during instruction practice of complicated apparatus which can not be readily improvised from materials at hand is prohibited. The simple apparatus described below is ample for all purposes.

a. Sighting bar.—(1) Provide a bar of wood about 1 by 2 inches and 4½ feet long. Cut two thin slots 1 inch deep across the edge. Place one slot 5½ inches from the end and the other 26 inches from the same end of the bar. (See fig. B, pl. 1.)

(2) Make a front sight of thin metal ½ by 3 inches bent in the shape of an L and tack it to the edge of the bar between the two slots and one-half inch from the slot nearest the end. (See figs. D (d) and D (g), pl. 1.) Have the leg of the L project above the bar one-half to three-fourths of an inch. (See fig. C, pl. 1.)

(3) Make an eyepiece from a piece of tin or zinc 3 by 7 inches. (Figs. D (c), D (f), and D (h), pl. 1.) Cut along the

dotted lines to form a shape shown in figure. Tack this eyepiece to the end of the bar farthest from the slots so that the top of the eyepiece extends 1 inch above the top of the bar. (See fig. C, pl. 1.) Make a round hole 0.03 of an inch in diameter in the middle of the eyepiece one-half inch above the bar.

(4) Make a peep rear sight of thin metal or cardboard 3 by 3 inches and cut a round hole three-fourths of an inch in diameter in its center. (See fig. D (b), pl. 1.)

(5) Cut an open rear sight of thin metal or cardboard 1½ by 3 inches with a semicircular notch three-fourths of an inch wide in the middle of one of the long edges. (See fig. D, (e), pl. 1.)

(6) Cut a piece of thin metal or cardboard 3 by 3 inches, painted white, and have a black bull's-eye one-half of an inch in diameter painted or pasted on the center. (See fig. D (a), pl. 1.)

(7) Place two pieces of tin 1 inch wide and 3 inches long in each slot. Fold the loose ends away from each other and tack them to the sides of the bar. (See fig. C, pl. 1.)

(8) Blacken the eyepiece, the front sight, the rear sights, and the top of the bar.

b. Rifle rest.—An empty ammunition box or any other well-made box of suitable size, with notches cut in the ends to fit the rifle closely, makes a good rifle rest. The rifle is placed in these notches with the trigger guard close to and outside of one end. The sling is loosened and pulled to one side. The box is half filled with earth or sand to make it more stationary.

c. Sighting disks.—Sighting disks are of three sizes. The disk to be used at a distance of 50 feet is about 3 inches in diameter. This disk is made of tin or cardboard and mounted on a handle, as shown in plate 2. The bull's-eye will be mounted on a background of clean white paper. The disks to be used at 200 and 500 yards are, respectively, 10 and 20 inches in diameter. These disks are painted black and mounted on white handles, which are 4 or 5 feet long. All bull's-eyes will be black and circular and will have a hole in the center large enough to admit the point of a pencil.

d. Range equipment, etc.—The range will be provided with benches, cleaning racks, and scorers' tables.

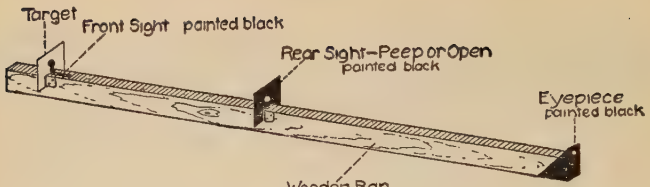


FIG. A



Top View

FIG. B.

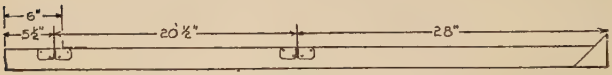


FIG. C. Side View



FIG. D.

Construction

Wooden Bar – 1"×2"×4'6" (Approx.)
Eyepiece – Thin metal 3"×7" Hole .03" D.
Rear Sight – Thin metal or Cardboard
3"×3" Hole in Center ¾" D.
Front Sight – Thin metal ½"×3" Bent "L" Shape
Target – Thin metal or Cardboard 3"×3" painted
white – Black bullseye ¾" D. in Center
Slits – 1" deep may be lined with thin metal strips.

PLATE 1

SIGHTING DISK

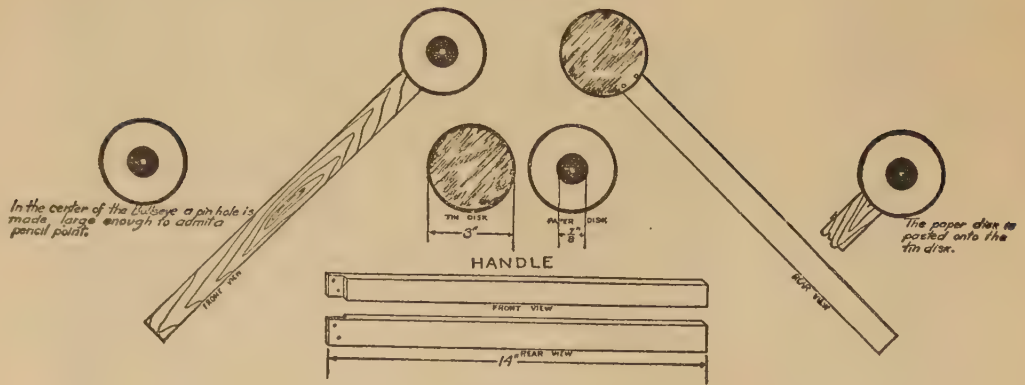


PLATE 2

Section II

PERSONNEL TO FIRE—COURSES TO BE FIRED—QUALIFICATION

109. *Personnel to fire.—a.* The following table shows a classification of personnel for the purpose of determining who will fire and courses to be fired, subject to ammunition allowances:

Classification of personnel	Course to be fired			
	A	B	C	D
1. All enlisted men of the rifle company, Infantry regiment, and of the troop, Cavalry regiment, who are armed with the rifle, automatic rifle, or machine rifle	(1)	(1)	(1)	(1)
2. All enlisted men of the Infantry, Cavalry, Coast Artillery, Corps of Engineers, Quartermaster Corps, Ordnance, and Chemical Warfare Service not included in 1 above, who are armed with the rifle, automatic rifle, or the machine rifle	(1)	(1)	(1)	(1)
3. All enlisted men of the Infantry, Cavalry, Coast Artillery, Corps of Engineers, Quartermaster Corps, Ordnance, or Chemical Warfare Service not included in 1 and 2 above	(1)	(1)	(1)	(1)
4. All officers of less than 15 years' service on duty with troops required to fire	(1)	(1)	(1)	(1)
5. All officers of Infantry, Cavalry, Coast Artillery, Corps of Engineers, Quartermaster Corps, Ordnance, and Chemical Warfare Service not included above	(1)	(1)	(1)	(1)
6. Warrant officers	(1)	(1)	(1)	(1)

[1] As specified annually by Military Bureau.

Explanatory note.—National Guard organizations may be authorized by the Chief of the Militia Bureau to fire Course A, but, under specific conditions, to fire Course B, Course C, or Course D. Such authority may be so granted in the following cases: Where a suitable range for Course A is not available; where, although a suitable range for Course A may be available, still lack of time or the status of marksmanship training of organizations (or certain members thereof) would prevent the attainment of profitable results.

b. All officers, warrant officers, and enlisted men who are authorized or required to fire and who are not on duty with a company or like organization will, if they fire, be attached to some organization for practice, or otherwise be provided for by their regimental, separate battalion, or station commander,

who will be responsible for their classification and the reports connected therewith.

c. In cases of illness the post commander may excuse officers, warrant officers, and enlisted men from rifle practice upon the written recommendation of the surgeon stating that rifle practice would be injurious to the individuals involved. Physical defects, as such, including defective vision, will not be considered as reasons for excusing men from rifle practice and will not be made the basis of a recommendation by the surgeon upon the specific subject of rifle practice except in those cases in which steps have been initiated to obtain a discharge for physical disability.

d. The corps area or department commander is authorized to excuse any individual or unit from the required target practice, or to direct that they fire a shorter course than that herein required.

e. Recruits joining too late to permit thorough instruction in preparatory training in rifle marksmanship before firing may be excused by the post commander. However, any recruit who joins three weeks before the end of the regular practice period of an organization can be thoroughly instructed in rifle marksmanship, and will be required to fire the record course during this period.

110. *General provisions governing courses.—a. Instruction practice.*—(1) The instruction practice outlined for each course is meant to serve as a guide. Only the general plan of beginning the practice in the prone position at all ranges with the sandbag rest need be followed. The amount of instruction practice to be given and the number of shots to be fired at each range will be such as to conform to the authorized ammunition allowances.

(2) The first 10 shots in rapid fire at each range may be fired in two scores of two clips each, the clips for each score containing five dummy cartridges and five loaded cartridges mixed. This form of practice is excellent training and saves ammunition. Its use at other times during the instruction practice is authorized and recommended.

(3) The amount of instruction practice is not limited to that prescribed in the tables. Such additional practice as time and ammunition allowance permit will be given.

b. Record practice.—The order of sequence in firing the record course may be changed when local conditions make such action advisable.

111. ***Course A.—a. Instruction practice.***

TABLE I.—*Slow fire*

Range	Time	Shots	Target	Position
200	No limit	10	A	Prone with sandbag.
300	do	10	A	Do.
500	do	10	B	Do.
600	do	10	B	Do.

TABLE II.—*Slow fire*

Range	Time	Shots	Target	Position
200	No limit	10	A	Prone without sandbag
300	do	10	A	Do.
500	do	10	B	Do.
600	do	[1] 10	B	Prone with sandbag.

[1] Two sighting shots (2 s. s.) will be fired at 600 yards.

TABLE III.—*Slow fire*

Range	Time	Shots	Target	Position
300	No limit	10	A	Sitting.
300	do	10	A	Kneeling.
200	do	10	A	Standing.

TABLE IV.—*Rapid fire*

Range	Time	Shots	Target	Position
200	1 minute	10	D	Sitting or kneeling from standing.
300	1 minute 10 seconds	10	D	Prone from standing.
500	1 minute 20 seconds	10	D	Prone.

b. Record practice.

TABLE V.—*Slow fire*

Range	Time	Shots	Target	Position
200	No limit	10	A	Standing.
300	do	10	A	5 sitting, 5 kneeling.
500	do	10	B	Prone.
600	do	[1] 10	B	Prone with sandbag.

[1] Two sighting shots (2 s. s.) will be fired at 600 yards.

TABLE VI.—*Rapid fire*

Range	Time	Shots	Target	Position
200	1 minute	10	D	Sitting or kneeling from standing.
300	1 minute, 10 seconds	10	D	Prone from standing.
500	1 minute, 20 seconds	10	D	Prone.

112. *Course B.—a. Instruction practice.*

TABLE I.—*Slow fire*

Range	Time	Shots	Target	Position
200	No limit	10	A	Prone with sandbag.
300	do	10	A	Do.
500	do	10	B	Do.

TABLE II.—*Slow fire*

Range	Time	Shots	Target	Position
200	No limit	10	A	Prone without sandbag.
300	do	10	A	Do.
500	do	10	B	Do.

TABLE III.—*Slow fire*

Range	Time	Shots	Target	Position
300	No limit	10	A	Sitting.
300	do	10	A	Kneeling.
200	do	10	A	Standing.

TABLE IV.—*Rapid fire*

Range	Time	Shots	Target	Position
200	1 minute	10	D	Sitting or kneeling from standing.
300	1 minute, 10 seconds	10	D	Prone from standing.

b. Record practice.

TABLE V.—*Slow fire*

Range	Time	Shots	Target	Position
200	No limit	10	A	Standing.
300	do	10	A	5 sitting, 5 kneeling.
500	do	10	B	Prone.

TABLE VI.—*Rapid fire*

Range	Time	Shots	Target	Position
200	1 minute	10	D	Sitting or kneeling from standing.
300	1 minute, 10 seconds	10	D	Prone from standing.

113. *Course C.—a. Instruction practice.*

TABLE I.—*Slow fire*

Range	Time	Shots	Target	Position
200	No limit	10	A	Prone with sandbag.
300	do	10	A	Do.

TABLE II.—*Slow fire*

Range	Time	Shots	Target	Position
200	No limit	10	A	Prone without sandbag.
300	do	10	A	Do.

TABLE III.—*Slow fire*

Range	Time	Shots	Target	Position
300	No limit	10	A	Sitting.
300	do	10	A	Kneeling.
200	do	10	A	Standing.

TABLE IV.—*Rapid fire*

Range	Time	Shots	Target	Position
200	1 minute	10	D	Sitting or kneeling from standing.
300	1 minute, 10 seconds	10	D	Prone from standing.

b. Record practice.

TABLE V.—*Slow fire*

Range	Time	Shots	Target	Position
200	No limit	10	A	Standing.
300	do	10	A	5 sitting, 5 kneeling.
300	do	10	A	Prone.

TABLE VI.—*Rapid fire*

Range	Time	Shots	Target	Position
200	1 minute	10	D	Sitting from standing.
300	1 minute, 10 seconds	10	D	Prone from standing.

114. *Course D.—a. Instruction practice.*

TABLE I.—*Slow fire—To be fired twice before proceeding with Table II*

Range	Time	Shots	Target	Position
200	No limit	10	A	Prone with sandbag.
200	do	10	A	Prone.

TABLE II.—*Slow fire*

Range	Time	Shots	Target	Position
200	No limit	10	A	Sitting.
200	do	10	A	Kneeling.
200	do	10	A	Standing.

TABLE III.—*Rapid fire*

Range	Time	Shots	Target	Position
200	1 minute	10	D	Prone.
200	do	10	D	Sitting or kneeling.
200	do	10	D	

b. Record practice.

TABLE IV.—*Slow fire*

Range	Time	Shots	Target	Position
200	No limit	10	A	Prone.
200	do	10	A	5 sitting, 5 kneeling.
200	do	10	A	Standing.

TABLE V.—*Rapid fire*

Range	Time	Shots	Target	Position
200	1 minute	10	D	Prone from standing.
200	do	10	D	Kneeling or sitting from standing.

115. *Qualification.*—The minimum aggregate scores required for qualification or for requalification in each course are as follows:

Course	Expert rifleman	Sharpshooter	Marksman
A	306	290	240
B	220	210	185
C	222	212	187
D	224	214	190

Section III

INSIGNIA

116. *Insignia.—a.* To each officer, warrant officer, and enlisted man qualifying for the first time as expert rifleman, sharpshooter, or marksman, certain insignia (as provided for in Army Regulations), indicating their skill in marksmanship, will be issued.

b. Insignia may be worn during the period for which the qualification is held. Officers not required to fire may wear the insignia of last qualification.

117. *How insignia are obtained.—a.* Immediately after the close of the practice season the company commander will report by letter to the commanding officer the names of members of his organization who have made a new or a renewed qualification. With this letter the company commander will submit a requisition for the required number of badges and bars. This requisition will be disposed of as any other special quartermaster requisition.

b. The insignia of qualification earned by members of the National Guard are procured by the State authorities as provided in National Guard Regulations.

118. *Duplicates.*—The insignia will become the property of the person to whom issued. If they are lost by the owner or in transmission to him, or if they become unsightly from long wear, they may be replaced without cost to the owner. But in all cases the official certificate of the company commander to the effect that he has investigated the circumstances of the loss or damage and finds that no negligence can be imputed to the soldier will be required as evidence upon which to make the new issues. In case of loss, claim must be made within 60 days from date of loss. Duplicates, if desired, for use on separate coats will be sold to those entitled to wear the insignia.

Section IV

GENERAL PRINCIPLES GOVERNING TARGET PRACTICE

119. *Permanent range personnel.*—The successful operation of a rifle range requires the following personnel:

a. Commissioned.—A range officer or a chief range officer and assistants.

b. Enlisted.—A noncommissioned officer in charge of the pit and such fatigue details as may be required.

120. *Range officers.—a. Appointment.*—When rifle practice is held simultaneously or successively by different organizations on a large range where more than one range officer is required, the senior officer appointed for such duty will be designated as the chief range officer. When only one range officer is appointed he will be designated as the range officer.

b. Duties.—The chief range officer or the range officer makes timely estimates for material and labor to place the range in proper condition for the practice season and supervises and directs all necessary repairs to shelters, butts, targets, firing points, and telephone lines. He exercises direct supervision over the practical operation of the rifle range during the practice season. He maintains order, regulates the distribution of ranges and targets, and, in general, assists the officer in charge of firing by using the means necessary to secure efficient and accurate service from the working force of the range. He provides for the safety of the markers and any visitors. When necessary, he provides range guards and instructs them in the methods to be used for the protection of life and property within the danger area. In case there is no range officer present, the senior officer on duty with troops firing performs the duties of range officer.

121. *Noncommissioned officer in charge of the pit.*—A competent noncommissioned officer and such assistants as the post commander may deem necessary will be detailed permanently during the practice season in charge of arrangements in the pit. The noncommissioned officer in charge of the pit is responsible to the senior range officer for the discipline and efficiency of all target details. He sees that all of the target equipment is kept in a serviceable condition; that the desired targets are ready for firing at the appointed time; and that all target details as they enter the pit are provided with the proper flags, marking disks, paste, pasters, and spotters.

122. *Order of instruction and record practice.—a.* The practice season opens with instruction practice. Each person will complete instruction practice before proceeding with record practice.

b. When record practice is once begun it is carried to completion before any other practice is permitted.

c. As a rule record practice will not be fired by any rifleman on the same day that he fires any part of instruction practice.

However, when the time allotted to range practice is very limited, the officer in charge of firing may authorize record firing on the same day. Instruction and record practice will not be conducted simultaneously except on ranges where the firing points are in echelon or where the instruction firing takes place on a different part of the range.

123. *Uniform.*—The uniform to be worn during instruction practice and record firing will be prescribed by the commanding officer.

124. *Equipment.*—The garrison belt or the field belt, stripped, will be worn during instruction practice and record firing.

125. *Safety precautions.*—Rifles will not be loaded in rear of the firing line.

Section V

PROCEDURE GOVERNING RECORD PRACTICE

126. *Applicable to instruction practice.*—The procedure prescribed herein for record practice is applicable to instruction practice with the following exceptions:

a. Scores are not required to be kept in the pit.

b. Only such officers and noncommissioned officers are on duty in the pit as are necessary to preserve order and insure efficient pit service.

c. The scores may be kept on the firing line in any manner authorized by the organization commander.

127. *Organization of the firing line.*—*a.* Scorers seated close to and to the right rear of the person firing.

b. Telephone operators 5 paces in rear of the firing line.

c. Persons awaiting their turn to fire 10 paces in rear of the firing line.

d. Low arm racks or rifle rests and cleaning racks 20 paces in rear of the firing line.

128. *Target details.*—The details for the supervision, operation, marking, and scoring of targets during record practice consist of officers, noncommissioned officers, and privates as follows:

a. One commissioned officer assigned to each two targets.

When it is impracticable to detail one officer to each two targets in the pit, an officer will be assigned to supervise the marking and scoring of not to exceed four targets. In this case the pit scores will be kept by the noncommissioned officer in charge of each target, who will sign the score card. The

officer will take up and sign each score card as soon as a complete score is recorded.

b. One noncommissioned officer assigned to each target to direct and supervise the markers. This noncommissioned officer will be selected, except at a one-company post, from an organization other than the one firing on the target which he supervises.

c. One or two privates assigned to operate and mark each target. These privates will be selected from the organization firing on the target to which they are assigned.

129. *Score cards and scoring.—a.* Duplicate score cards will be kept, one at the firing point and one in the pit. These cards will be of different colors. The cards at the firing point will bear the date, the man's name, the number of the target, and the order of firing. The pit card will not show the man's name, but will bear the date, the number of the target, and the order of firing.

b. Entries on all score cards will be made in ink or with indelible pencil. No alteration or correction will be made on the card except by the organization commander, who will initial each alteration or correction made.

c. The scores at each firing point will be kept by a noncommissioned officer of some organization other than that firing on the target to which he is assigned, except in case of a one-company garrison, when company officers will exercise special care to insure correct scoring. As soon as a score is completed the score card will be signed by the scorer, taken up and signed by the officer supervising the scoring, and turned over to the organization commander. Except when required for entering new scores on the range, score cards will be retained in the personal possession of the organization commander and not allowed in the hands of an elisted man from the beginning of record practice until the required reports of range practice have been rendered.

d. In the pit, the officer keeps the scores for the two targets to which he is assigned. As soon as a score is completed he signs the score card. He turns these cards over to the organization commander at the end of the day's firing, or at such times as requested.

e. Upon the completion of record firing, the pit score cards of each man will be attached to his official score card kept at the firing point. These cards will be kept available for inspection among the company records for one year, and then destroyed.

f. The score kept at the firing point is the record score. In any case where the pit card and the firing-point card do not agree, no change will be made on either card. Both cards will be filed together with any written notes of explanation that the company commander desires to make. Errors in scoring, discovered at the time they are made, may be corrected at that time by the officer in charge, but not at a later time.

130. *Marking, slow fire.—a.* The value of the shot is indicated as follows:

(1) A bull's-eye, with a white disk.

(2) A four, with a red disk.

(3) A three, with a black and white disk.

(4) A two, with a black disk.

(5) A miss, by waving a danger flag across the front of the target.

(6) A ricochet hit, by displaying the ricochet flag and at the same time marking the hit with the appropriate disk.

b. The exact location of the hit is indicated by placing in the shot hole a spotter of size appropriate to the distance from the firing point. The center of the marking disk is placed over the spotter in signaling hits.

131. *Marking, rapid fire.*—The same disks are used to indicate the value of hits as in slow fire.

a. Spotters are placed in the shot holes before the target is run up for marking.

b. The marking begins with the hits of highest value, the center of the disk being placed over the spotter, then swung off the target and back again to the next spotter, care being taken each time to show only the face of the disk indicating the value of the shot being marked. The marking will be slow enough to avoid confusing the scorer at the firing point. When one spotter covers more than one shot hole the disk is placed over it the required number of times. Misses are indicated by slowly waving the red flag across the face of the target one time for each miss.

132. *Procedure, slow fire.—a. On the firing line.*—(1) One person only will be assigned to a target in each order.

(2) The scorer, as the value of each shot is signaled, announces in a tone sufficiently loud to be heard by the firer, the name of the firer, the number of the shot, and the value of the hit, and records the value of the hit on the score card of the individual who is firing.

(3) Whenever a target is marked without the individual assigned to that target having fired, as will occur when some one

fires on the wrong target, the scorer will notify the officer in charge, who will notify the officer assigned to that target in the pit to disregard the shot. This precaution is necessary to prevent errors in the pit record.

(4) When an individual fires on the wrong target he will not be scored a miss until the target to which he is assigned has been pulled down and the miss signaled from the pit.

(5) If a target is not half-masked at the completion of a score on that target, or if it is half-masked at the wrong time, the officer in charge of that firing point will adjust the matter at once over the telephone. This precaution is necessary to prevent the error from being carried on through the scores that follow.

b. In the pit.—(1) The target is withdrawn and marked after each shot.

(2) When a shot is fired at a target it is pulled down. The noncommissioned officer indicates the location of the hit to the officer who announces its value and records it on the score card. A spotter is then placed in the shot hole, the previous shot hole, if any, is pasted and the target is run up and marked. The noncommissioned officer supervises the marking of each shot. The officer also exercises general supervision over the marking.

(3) When the pit score card indicates that a score has been completed, the target is half-masked for about 30 seconds as a signal of such completion to the firing line. At the end of the 30 seconds the target is pulled fully down, the spotter removed, the shot hole pasted, and the target run up for the beginning of a new score.

(4) When a target frame is used as a counterweight for a double sliding target the blank side of such frame will be toward the firing line.

133. *Procedure, rapid fire.—a. On the firing line.*—(1) One person only will be assigned to a target in each order.

(2) When all is ready in the pit a red flag is displayed at the center target. At that signal the officer in charge of the firing line commands: LOAD. The rifles are loaded and locked.

(3) The officer in charge of the firing line then calls so that all may hear, "Ready on the right? Ready on the left?" Anyone who is not ready calls out, "Not ready on No. —." If any individual fails to fire at all, he will be given another opportunity to fire, but if he fires any shots the score must

stand as his record. He will not be permitted to repeat his score on the claim that he was not ready.

(4) All being ready on the firing line, the officer in charge commands: READY ON THE FIRING LINE. Rifles are unlocked and the position of ready assumed. The telephone orderly notifies the pit, "Ready on the firing line."

(5) The flag at the center target is waved and then withdrawn. Five seconds after the flag is withdrawn the targets appear, remain fully exposed for the prescribed period of time, and are then withdrawn. The firer takes the prescribed position as soon as the targets appear, except at 500 yards, in which case he is already in position, and fires or attempts to fire 10 shots, reloading from a full clip taken from the belt.

(6) As soon as the targets are withdrawn the officer in charge commands: UNLOAD. All unfired cartridges are removed from the rifle and the bolts are left open. The men remain in position on the firing line until they are ordered off by the officer in charge.

(7) As each shot is signaled it is announced as follows: "Target No. —, 1 five, 2 fives, 3 fives, 1 four, 2 fours, 3 fours, 4 fours, 1 three, 1 miss, 2 misses." The scorer notes these values on a pad and watches the target as he calls the shot. After the marking is finished he counts the number of shots marked and, if more or less than 10, calls: "Remark No. —." If 10 shots have been marked, he then enters the score on the soldier's score card and totals it as follows: 5 5 5 4 4 4 4 3 0 0=34.

b. In the pit.—(1) The time is regulated in the pit by the officer in charge.

(2) When all is ready in the pit the targets are fully withdrawn and a red flag is displayed at the center target.

(3) When the message is received that the firing line is ready, the red flag at the center target is waved and withdrawn and the command "Ready" is given to the pit details.

(4) Five seconds after the red flag is withdrawn the targets, by command or signal, are run up, left fully exposed for the prescribed period of time, and then withdrawn.

(5) The officers in the pit examine each of their targets in turn, announce the score and record it on the pit score card. Spotters are then placed in the shot holes and the targets run up and marked. The noncommissioned officer supervises the marking of each shot. The officer exercises general supervision over the marking.

(6) The targets are left up for about one minute after being marked and are then withdrawn, pasted, and made ready for another score. They may be left up until ordered pasted by the officer in charge of the firing line.

(7) If more than 10 hits are found on any target it will not be marked unless all of the hits have the same value. The officer in charge of the firing line will be notified of the fact by telephone.

134. *Use of telephones.*—*a.* Telephones will be used for official communications only.

b. No one will ask over the telephone for information as to the name or organization of any person firing on any particular target and no information of this nature will be transmitted.

c. The following language will be used over the telephone in the cases enumerated.

(1) When a shot has been fired and the target has not been withdrawn from the firing position, "Mark No. —."

(2) When a shot has been fired and the target withdrawn from the firing position but not marked, "Disk No. —."

(3) When the target has been withdrawn from the firing position and marked but the value of the shot has not been understood, "Redisk No. —."

(4) When the firing line is ready for rapid fire, "Ready on the firing line."

(5) When a shot is marked on a target and the person assigned thereto has not fired, "Disregard the last shot on No. —."

Section VI

RULES GOVERNING RECORD PRACTICE

135. *Men marking targets not to know who is firing.*—Officers and men in the pit will not know who is firing on any particular target. Any officer or man who attempts to obtain this information or who attempts to transmit it either over the telephone or otherwise will be made the subject of disciplinary action by the proper authority.

136. *Coaching prohibited.*—Coaching of any nature, while a score is being fired, is prohibited. Each firer must observe the location of his own hit as indicated by the marking disk or spotter. After a soldier has taken his place at the firing point, no person will render or attempt to render him any assistance whatever.

137. *Use of instruments.—a.* The use of field glasses, telescopes, and sight-setting instruments is authorized and encouraged.

b. The use of instruments or devices for determining the force and direction of the wind is authorized and encouraged during instruction practice, but will not be used during record firing.

138. *Shelter for firer.*—Sheds or shelter for the firer will not be permitted at any range.

139. *Restrictions as to the rifle.*—Troops will use the rifle with which they are armed. The rifle will be used as issued by the Ordnance Department. The use of additional appliances such as temporary shades for the sights, spirit levels, and orthoptic eyepieces is prohibited. The sights may be blackened. Any authorized size of peep sight issued by the Ordnance Department may be used. Small arms and appliances issued by the Ordnance Department for test and report will not be used for determining classification.

140. *Trigger pull.*—The trigger pull will be at least 3 pounds, and before record firing will be tested (with the barrel vertical) by an officer.

141. *Ammunition.*—The ammunition used will be the service cartridge as issued by the Ordnance Department, unless the use of other ammunition is authorized.

142. *Cleaning.*—Cleaning will be permitted only between scores.

143. *Use of gun sling.*—The gun sling will be used in connection with one arm only. For the purpose of adjustment for shooting, neither end will be removed from either sling swivel. No knot will be tied in the sling and the sling itself will neither be added to nor modified in any manner.

144. *Loading pieces.*—Pieces will not be loaded except by command or until position for firing has been taken.

145. *Warming or fouling shots.*—No warming or fouling shots will be allowed.

146. *Sighting shots.*—Sighting shots form no part of the score and are not recorded as such. When sighting shots are prescribed they will be taken. If, through no fault of his own, a soldier's record score has to be repeated because it was not completed, he will be given sighting shots with the new score, provided such shots are prescribed for that range.

147. *Shots cutting the edge of bull's-eye or line.*—Any shot cutting the edge of the figure or bull's-eye will be signaled and recorded as a hit in the figure or the bull's-eye. Because the

limiting line of each division of the target is the outer edge of the line separating it from the exterior division, a shot touching this line will be signaled and recorded as a hit in the higher division.

148. *Slow-fire score interrupted.*—If a slow-fire score is interrupted through no fault of the person firing, the unfired shots necessary to complete the score will be fired at the first opportunity thereafter.

149. *Misses.*—In all firing, before any miss is signaled, the target will be withdrawn from the firing position and carefully examined by an officer if an officer is on duty in the pit. Whenever the target is run up and a miss is signaled, it will be presumed that this examination has been thoroughly made. No challenge of the value signaled will be entertained or resignaling of the shot allowed.

150. *Accidental discharges.*—All shots fired by the soldier after he has taken his place at the firing point (and it is his turn to fire, the target being ready) will be considered in his score even if his piece was not directed toward the target or is accidentally discharged.

151. *Firing on wrong target.*—Shots fired upon the wrong target will be entered as a miss upon the score of the man firing, no matter what the value of the hit upon the wrong target may be. In rapid fire the soldier at fault is credited with only such hits as he may have made on his own target.

152. *Two shots on same target.*—In slow fire, if two shots strike a target at the same time, or nearly the same time, both will be signaled; if one of these shots was fired from the firing point assigned to that target, the hit having the highest of the two values signaled will be entered on the soldier's score and no record made of the other hit.

153. *Withdrawing target prematurely.*—In slow fire, if the target is withdrawn from the firing position just as the shot is fired, the scorer at that firing point will at once report the fact to the officer in charge of the scoring on that target. That officer will investigate to see if the case is as represented. Being satisfied that such is the case, he will direct that the shot be not considered and that the man fire another shot.

154. *Misfires in rapid fire.*—In the case of a misfire the soldier will cease firing immediately, the target will not be marked, and the score will be repeated.

155. *Unfired cartridges in rapid fire.*—Each unfired cartridge will be recorded as a miss.

156. *Disabled rifle in rapid fire.*—If, during the firing of a rapid-fire score, the rifle becomes disabled through no fault of the soldier, he will repeat the score. The breaking of a clip in reloading will not entitle the soldier to another score.

157. *More than 10 hits in rapid fire.*—When a target has more than 10 hits in rapid fire, the target will not be marked. The soldier firing on that target will repeat his score, except when all the hits have the same value, when the target will be marked and he will be given that value for each shot fired by him.

Section VII

RECORDS AND REPORTS

158. *Records.*—The company record of rifle marksmanship consists of the Score Card for Rifle Practice (W. D., A. G. O. Form No. 83) kept at the firing point during record practice.

159. *Reports.*—The reports of rifle firing will be submitted to the proper headquarters on the following forms as soon as possible after the completion of all record firing:

a. Report of Individual Classification (W. D., A. G. O. Form No. 90).

b. Consolidated Regimental Report (W. D., A. G. O. Form No. 91).

160. *Transmission and rendition of reports.*—See NGR 45.

Section VIII

COMPETITIONS

161. *Object.*—Competitions exist for the purposes of fostering interest in target practice, of furnishing the means for the exchange of ideas among those who excel in small-arms firing, and of classifying the best shots according to merit shown under similar conditions.

162. *When held.*—When directed by the Secretary of War, corps area, department, and Army rifle competitions will be held. These competitions will be held at such places and times as may be designated by the respective corps area or department commanders. Corps area and department commanders will submit to The Adjutant General, annually, by November 1, recommendations as to the competitions for the next calendar year.

163. *Selection of competitors.—a. Officers and warrant officers.*—(1) Each regimental commander will report to the corps area or department commander the names of any officers or warrant officers of his regiment who may desire to enter the competition and whom he can recommend for that purpose. He will further state, in case more than one is recommended, the comparative proficiency as rifle shots of those reported. From these reports, or from such additional reports as he may require, the corps area or department commander will select one officer or warrant officer, as competitor, from each regiment of Cavalry, Infantry, and Engineers and one from each battalion of mounted Engineers in his command. In addition, he may select one officer or warrant officer from each regiment armed with the rifle and not noted above, and one officer or warrant officer from each 50 officers and warrant officers (exclusive of medical officers and chaplains) not included in any of the above categories in his corps area or department.

(2) In case a regiment is divided between two or more corps areas or departments, the final selection of an officer or warrant officer from such a regiment will lie with the Secretary of War.

b. Enlisted men.—(1) The commanding officer of each company of infantry and engineers and of each troop of cavalry will select from the enlisted men of his organization the most suitable soldier. The selection should be made not only for excellence in shooting with the rifle, but also because of steadiness and good soldierly habits and conduct. He will report the name of the man so chosen to the regimental commander or, in the case of mounted engineers, to the battalion commander.

(2) Enlisted men of other organizations and branches armed with the rifle, and not mentioned above, and enlisted men on the detached enlisted men's list, may be permitted but not required to compete. When permitted to compete, they will be selected, as noted in (1) above, and for enlisted men on the detached enlisted men's list in the same ratio as for enlisted men of the Infantry rifle company, by their respective company or other commanding officer.

(3) The names of the men selected will be reported to the corps area or department commander, who will order them sent to the competition at the proper time.

c. Other competitors.—At the discretion of the corps area or department commander, enlisted men and officers of the National Guard and of the Organized Reserves may compete when the

circumstances are such that this is practicable. They will be selected in the same manner and in the same ratio as the competitors from the Regular Army.

164. *Assembly.*—The officers, warrant officers, and enlisted men thus selected will be assembled at some convenient place. After the completion of the prescribed preliminary practice, the enlisted men will compete for places on the team. At the same time and place the officers and warrant officers will compete not for places on the team but for badges.

165. *Course to be fired.—a.* The course to be fired in corps area or department rifle competitions will be as follows:

Range	Kind of fire	Target	Time limit	Number of shots	Position
200	Slow	A	1 minute per shot	10	Standing.
300	do	A	do	10	Sitting or kneeling.
500	do	B	do	10	Prone.
600	do	B	do	10 (2s. s.)	Do.
1,000	do	C	1½ minutes per shot	do	Do.
200	Rapid	D	1 minute	10 or more	Sitting or kneeling from standing.
300	do	D	1 minute, 10 seconds	do	Prone from standing.
500	do	D	1 minute, 20 seconds	do	Prone.

b. The order of sequence in firing will be determined by the officer in charge of the competition.

c. This course will be fired once for preliminary and twice for the competition proper by all competitors.

166. *Corps area or department team.*—The strength of the corps area or department team will be in direct proportion to the number of enlisted competitors engaged in the competition, the ratio being fixed at one member of the team to five competitors, fractions not considered. The team will be composed of those enlisted competitors making the highest aggregate scores for the entire competition proper.

167. *Prizes for enlisted men.*—To the members of the team thus selected bronze badges will be awarded with gold (first grade), silver (second grade), and bronze (third grade) clasps, according to order of merit and in the ratios indicated:

Competitors	Team	Gold	Silver	Bronze	Competitors	Team	Gold	Silver	Bronze
30 or more	6	1	2	3	110	22	3	7	12
35	7	1	2	4	115	23	3	7	13
40	8	1	2	5	120	24	3	8	13
45	9	1	3	5	125	25	3	8	14
50	10	2	3	5	130	26	3	8	15
55	11	2	3	6	135	27	3	9	15
60	12	2	4	6	140	28	4	9	15
65	13	2	4	7	145	29	4	9	16
70	14	2	4	8	150	30	4	10	16
75	15	2	5	8	155	31	4	10	17
80	16	2	5	9	160	32	4	10	18
85	17	2	5	10	165	33	4	11	18
90	18	2	6	10	170	34	4	11	19
95	19	3	6	10	175	35	4	11	20
100	20	3	6	11	180	36	4	12	20
105	21	3	7	11					

and so on, according to the principle illustrated in the above table—that is, for each 45 men or fraction, one badge with gold clasp; for each 15 men, disregarding fractions, one badge with silver clasp; the remaining members of the team, badges with bronze clasp.

168. *Prizes for officers and warrant officers.*—Officers and warrant officers will be awarded badges as follows: A separate list will be made so as to include the names of officers, warrant officers, and enlisted competitors, arranged in the order of merit in the competition. The officers and warrant officers will then be awarded badges according to their position on the consolidated list by applying the table of prizes given in the preceding paragraph to the total number on that list. In this way enlisted men compete only against enlisted men for prizes, but officers and warrant officers compete against both themselves and enlisted men.

169. *Presentation of prizes.*—*a.* The presentation of competition prizes will ordinarily be made at the conclusion of the contest, and will be conducted with the ceremony and formality warranted by the importance of the occasion. Timely requisition should be made to the corps area or department quartermaster for the prizes required.

b. Winners of badges in rifle competitions will not part with them without authority from the Secretary of War, but will hold them subject to inspection at any time. These badges will be engraved as prescribed in AR 600–35. If lost or destroyed

without fault or neglect on the part of the person to whom originally issued, duplicate badges, with appropriate engraving, will be issued only upon certification by The Adjutant General, the cost of such duplicate badges and engraving not to be borne by the War Department.

c. The names of the winners, with rank and organization, and aggregate score, will be published in corps area or department orders, and at least two copies of such orders will be furnished The Adjutant General.

170. *Officials.—a. Officer in charge.*—The officer in charge will be an officer of experience, preferably a field officer. He will have control of the range for the conduct of the competition and for the police and government of the range during the competition. He will prescribe the hours for preliminary practice and for the competitions proper. His decision on such matters will be final.

b. Assistant to officer in charge.—An assistant to the officer in charge will report to, and receive instructions from, the officer in charge and will assist him in the management of the competition. He will also act as chief range official. He will have immediate charge of the range and pit and all details pertaining thereto.

c. Adjutant.—The adjutant will discharge the duties of adjutant to the officer in charge, issue by direction of the officer in charge the necessary orders, and perform such other duties as may be assigned to him. He will be in direct charge of the competitors, whether they are encamped or assigned to companies in barracks. He will detail daily such range officials, scorers, and markers as may be considered necessary to carry on the competition.

d. Quartermaster.—The quartermaster will have charge of quartering all competitors and arranging for the transportation of their baggage and property upon their arrival at the competition. If they encamp, he will lay out and put up the camp. He will provide all the property, including stationery and office supplies, other than ordnance and signal property, required for the competition and for the preparation and care of the range. He will perform such other duties as may be assigned to him by the officer in charge.

e. Statistical officer.—The statistical officer will assign the competitors by lot or by a scheme worked out prior to the competition to targets and to an order of firing. He will verify the additions of the scores as reported by the scorers, grade

the competitors in order of excellence, and prepare the result for official announcement. He will issue such bulletins from time to time as may be ordered by the officer in charge.

f. Ordnance officer.—The ordnance officer will make timely requisition for all ammunition and ordnance stores needed in the matches. During the matches he will supply such stores as required.

g. Signal officer.—The signal officer will have charge of the electrical equipment of the range and procure on requisition such telephones, signal stores, and field glasses as may be needed for the proper conduct of the competition.

h. Range officials.—Under direction of, and as assistants to, the chief range official are a number of range officials, not fewer than one to two targets in the pit and one to four firing points. Their duties are to supervise the marking and scoring, to see that the firing is conducted according to the regulations, and to perform such other duties as required. Officers experienced in range work will normally be selected for duty as range officials. During the firing at all competitions a range official will be detailed in charge of the pit. The officer in charge and chief range official will formally assemble the range officials and instruct them in their duties before the opening of the competition. They will be placed on duty during the preliminary practice for their practical instruction.

171. *Details of enlisted men.*—The officer in charge will apply for such details of enlisted men as he may consider necessary. These details will be permanent for the competition.

172. *Rules.*—The rules governing every feature connected with record firing in range practice, as prescribed in these regulations, will regulate the procedure in competitions.

173. *Special rules governing competitions.*—*a. Changing arms.*—No two competitors will fire in any competition with the same rifle. No competitor will change his rifle during any competition unless his first piece has become unserviceable through accident. Such contingency will be verified by a range official. Violation of this rule will be a just cause for exclusion from the competition.

b. Punctuality.—Competitors must be present at the firing point at the proper time and in the order stated on their score cards. No application on the part of the competitor for any alteration in his assignment will be entertained.

c. Delay in firing.—In slow fire, competitors will not be hurried in firing but will be permitted such slight delay after each

shot as they may desire, provided the time of firing the score does not exceed one minute per shot at 600 yards or less, and one and one-half minutes per shot at ranges over 600 yards.

d. Spectators.—During the progress of a match or competition, no one except the officers on duty on the range, the competitors, and score keepers will be allowed within the ropes unless special permission is given by the officer in charge.

e. Stations of competitors awaiting turn to fire.—Competitors will be stationed 10 yards in rear of the firing point and will remain there until called to the firing point by the score keeper.

f. Expressions of approbation, etc.—Expressions of approbation or disappointment on the part of the spectators or competitors must not be uttered loud enough to be heard at the firing point.

g. Protests.—Protests and objections must be submitted to the range official in charge of the target and not directly to the officer in charge. In case a competitor is not satisfied with the decision of the range official he may appeal to the officer in charge. Final appeals from decisions of the officer in charge must be made in writing and forwarded through that officer to the authority ordering the competition.

h. Numbering competitors.—At all competitions where a number of men engage in the same match or competition firing, the labor of the statistical officer will be greatly lightened and the prompt announcement of the scores facilitated by giving each competitor a number by which he is known throughout the firing.

i. Score cards.—Each competitor should be given a score card stating his target and orders of firing at each range and containing space for the record of shots fired and for the signature of the scorer and range officials. As scores are completed an officer detailed for the purpose should, without waiting for all firing to cease, collect the records of the score and transmit them to the statistical officer for entry upon the permanent records and bulletins.

j. Altering score.—Competitors must pay attention to the score as announced and recorded so that any error may be promptly investigated. The recorded value of any shot will not be changed after the following shot has been fired unless some special message with reference to it is received from one of the range officials in the target pit. Any alteration of a score must be witnessed by the officer in charge of the firing point and indorsed with his initials.

k. Special rules.—Such special rules or directions as the officer in charge may give must be rigidly observed by competitors and all other persons upon the range.

l. Evading rules.—Any competitor who may be detected in an evasion of the conditions prescribed for any competition will be debarred from further competition.

m. Falsifying scores.—Any competitor who may be guilty of falsifying his score or being accessory thereto will be debarred from the competition.

n. Offering bribes.—Any competitor who offers a bribe of any kind to a scorer or marker will be debarred from the competition.

o. Disorderly conduct, intoxication, etc.—Any competitor who refuses to obey the instructions of the officer in charge or his assistants, or who violates any of these regulations, or is guilty of disorderly conduct or intoxication, will be debarred from the competition.

p. Report of competitors debarred.—The officer in charge of the competition will, upon the completion of the competition, report to the corps area or department commander for the information of the War Department the names of any competitors debarred from the competition. The circumstances will be stated in each case, in order that the War Department may debar such competitors from all future competitions if such action is deemed advisable.

q. Interference.—Any person, whether a competitor or not, interfering with any of the firing squads or annoying them in any way will be warned to desist. If the offense is repeated he will be ordered off the range at once.

174. *Acquaintance with regulations.*—Competitors and all others connected with competitions will make themselves acquainted with the foregoing regulations as well as with the conditions of the competitive firing in which they may be participating, because the plea of ignorance will not be entertained.

175. *Ties in competitions.*—Ties will be decided as follows:

a. By the highest aggregate score made in rapid fire. If still a tie, by the highest total score in rapid fire at 500 yards. If still a tie, by the highest total score in rapid fire at 300 yards. If still a tie, by the highest total score in rapid fire at 200 yards.

If still a tie:

b. By the fewest misses in rapid fire.

c. By the greatest number of hits in the figure in rapid fire.
d. By the fewest misses in slow fire.
e. By the fewest outers (twos) in slow fire.
f. By the fewest inners (threes) in slow fire.
g. By the shots in slow fire in inverse order.
h. If still a tie, by firing single shots, slow fire, at the longest range.

176. *Division and post competitions.*—To further the interest in target practice, division and post contests in small-arms practice are suggested. These competitions should form a part of the exercises for field days. Subject to ammunition allowances, the program for these competitions is left to the discretion of the commander. The firing should, as a rule, be team firing.

177. *Distinguished marksmen.—a. Requirements.*—An officer, warrant officer, or enlisted man serving in any component of the Army of the United States or the National Guard of any State, Territory, or the District of Columbia, when not in Federal service, will be designated by the War Department as a distinguished marksman when he has won any three of the following authorized badges or medals:

(1) The badges or medals awarded in corps area, department, departmental, combined departmental, division, divisional, or Army rifle and carbine competitions.

(2) The medals won in the national individual rifle matches.

(3) The badges awarded to the principals and alternates winning places on rifle teams selected to represent, in the national rifle team matches, (*a*) the Regular Army or a part thereof, (*b*) the Organized Reserves or a part thereof, or (*c*) the duly organized National Guard of any State, Territory, or the District of Columbia; provided that commencing with the year 1925 only the first 16 teams in order of merit in such national rifle team matches will be recognized in computing the credits toward designation as a distinguished marksman. These badges will be awarded directly by the War Department.

(4) The medals won by members who actually fired on a rifle team competing in the national rifle team matches; provided that commencing with the year 1925 only the first 16 teams in order of merit in such matches will be recognized in computing the credits toward the designation as a distinguished marksman. These medals are awarded through the National Board for the Promotion of Rifle Practice.

b. Attainment of distinguished classification.—The year in which a marksman first became eligible for designation by the War Department as a distinguished marksman is the year during which he is regarded as having attained the distinguished classification and for which he will be so designated notwithstanding the fact that the necessary credits were won in prior years.

c. Badges.—To each distinguished marksman an appropriate badge, known as the distinguished marksman badge, engraved as prescribed in AR 600–35, will be issued, which, if lost after being received by him, can be replaced by purchase only; authority for such replacement must be obtained from the War Department. All duplicate distinguished marksman badges which may be authorized will also be engraved, the cost of such engraving not to be borne by the War Department.

d. Application.—Individuals who desire to be designated by the War Department as distinguished marksmen and to receive the distinguished marksman's badge must make individual applications therefor to The Adjutant General. Each such application should contain a chronological statement of all rifle competitions or matches participated in by the applicant, and the kind of medals won by him, and his rank and organization on each occasion. If the application is from a person in the military service, it should set forth the applicant's rank and organization, and must be forwarded through military channels.

e. Restriction on competition of distinguished marksmen.—Distinguished marksmen are not eligible to compete for badges or medals in corps area or department competitions with the arm in the use of which they are distinguished.

f. Awards to be noted in records.—Awards of these badges will be noted in the personal records of officers, on service records of enlisted men, or similar records of each distinguished marksman.

Section IX

TARGETS AND RANGES

178. *Targets.*—The specifications of dimensions of marksmanship targets, together with the value of hits in their divisions, are as follows:

a. Target A, the short-range target, used for 200 and 300 yards, is a rectangle 6 feet high, 4 feet wide, black circular bull's-eye, 10 inches in diameter, value of hit, 5; center ring,

26 inches in diameter, value of hit, 4; inner ring, 46 inches in diameter, value of hit, 3; outer, remainder of target, value of hit, 2.

b. Target B, the midrange target, used for 500 and 600 yards, is a square 6 feet on a side, black circular bull's-eye, 20 inches in diameter; center ring, 37 inches in diameter; inner ring, 53 inches in diameter; outer, remainder of target. Value of hits, same as on target A.

c. Target C, the long-range target, used for 800 and 1,000 yards, is a rectangle 6 feet high and 10 feet wide, black circular bull's-eye, 36 inches in diameter; center ring, 54 inches in diameter; inner space outside of center ring bounded by vertical lines 2 feet from each end of target; outer, remainder of target. Value of hits, same as on target A.

d. Target D, the rapid-fire target, is a square 6 feet on a side, has in its middle a black silhouette representing a soldier in the prone position. Value of hits in the figure, 5; in the space immediately outside the figure, 4; in the space immediately outside the 4 space, 3; remainder of the target, 2.

e. Target L, a rectangle 6 feet high and 4 feet wide, with black circular bull's-eye, 5 inches in diameter. Value of hit therein, 10. Seven rings with diameter, as follows:

	Value of hit
(1) 8½ inches	9
(2) 12 inches	8
(3) 15½ inches	7
(4) 19 inches	6
(5) 22½ inches	5
(6) 26 inches	4
(7) 46 inches	3
(8) Outer, remainder of target	2

Target L is used in all practice at 100 yards.

179. *Principles governing selection.—a. Classes.*—There are two classes of ranges: Class A ranges, which are more or less limited in extent, and are equipped for known-distance practice; class B ranges, which are of extended area and diversified terrain, and are used for combat firing. The following paragraphs refer to class A ranges only.

b. Rules for selection.—As the nature and extent of the ground available for target practice and also the general climatic conditions are often widely dissimilar for different military posts, it is not possible to prescribe any particular rules

governing the selection of ranges, but only to express certain general conditions to which ranges should be made to conform. In view of the extreme range and penetration of the bullet of the United States rifle, model 1903, it will be found necessary in the case of many posts to have target practice conducted at a distance of several miles from the post, a condition which necessitates the establishment of a camp on or near the range. The target practice can then be conducted without the interference of post duties.

c. Security necessary.—For posts situated in thickly settled localities, where the extent of the military reservation is limited, the first condition to be fulfilled is that of security for those living or laboring near, or passing by, the range. This requirement can be secured for class A range by selecting ground where a natural butt is available or by making an artificial butt sufficiently extensive to stop wild shots. For complete security there should be no road, building, or cultivated ground nearer than 300 yards to either flank of the range nor than 2 miles to its rear. This condition can rarely be secured unless a natural butt of large extent exists.

d. Direction of the range.—If possible, a range should be so located that the firing is toward, or slightly to the east of, north. Such location gives a good light on the face of the targets during the greater part of the day. However, security and suitable ground are more important than direction.

e. Best ground for class A range.—Smooth, level ground, or ground with only a very moderate slope, is best adapted for a range. The targets should be on the same level with the firer, or only slightly above him. Firing downhill should be avoided.

f. Size of range.—The size of the range is determined by its plan and by the number of troops that will fire over it at a time. There are two general plans used in range construction—one with a single target pit and firing points for each range, the other with firing points on one continuous line, the target pits for the various ranges being in echelon. The latter type requires more ground and is less suitable for training troops.

180. *Principles governing construction.—a. Intervals between targets.*—To reduce to a minimum the amount of labor required in preparing the range, the targets should be no farther apart than is necessary to obviate the probability of a shot being fired on the wrong target. As a general rule, the intervals between targets are equal to the width of the targets themselves—that is, at short and midrange, 6 feet; at long range, 12 feet. Where

the necessity exists for as many targets as possible in a limited space, this interval may be reduced one-half without materially affecting the value of the instruction.

b. Protection for markers.—(1) On all ranges protection must be provided for the pit details. This is done by excavating a pit for the targets or by constructing a parapet in front of them, or by a combination of these methods.

(2) Where there are several targets in a row, the shelter should be continuous. It must be high enough to protect the markers. The parapet may be of earth, with a timber or concrete revetment, of sufficient thickness to stop bullets, and from 7½ to 8 feet high above the ground or platform on which the markers stand.

c. Artificial butts.—If an artificial butt is constructed as a bullet stop, it should be of earth not less than 30 feet high and with a slope of not less than 45°. It should be extended about 5 yards beyond the outside targets and should be placed as close behind the targets as possible. The slopes should be sodded.

d. Hills as butts.—A natural hill to form an effective butt should have a slope of not less than 45°; if originally more gradual, it should be cut into steps, the face of each step having that slope. As a temporary expedient the face of the hill may be plowed perpendicularly to the range; but as the bullets soon cut down the furrows, this measure must be frequently repeated to prevent the danger of ricochets.

e. Numbering of targets.—Each target should be designated by a number. The numbers for ranges up to 600 yards should be at least 6 feet in height and should be painted black on a white background. The Arabic is preferable to the Roman notation, being more readily comprehended by the soldiers; if the numbers are made of the size suggested they will always be quickly recognized. They should be placed on the butt behind each target or on the parapet in front, and not so far above or below as to prevent the firer seeing the number when aiming at the target.

f. Measuring the range.—The range should be carefully measured and marked with stakes at each 100 yards in front of each target. The stakes should be about 12 inches above the ground and be painted white. They should have in black figures the number of the corresponding target and its distance. These stakes will then designate the firing points for each target at the different distances. Particular care should be taken that each range thus marked out is perpendicular to the face of its own target.

g. Ranges parallel.—The different ranges for the same distance should all be parallel, so that similar conditions with respect to wind and light may exist. It is not essential, however, that the ranges employed for long-distance shooting should be parallel to those used for the ordinary company practice.

h. Firing mounds.—If it becomes necessary to raise a firing point on account of low ground, a low mound of earth no higher than absolutely required should be made. The mound should be level, sodded, and not less than 12 feet square. If the entire firing line is raised, the firing mound should be level, sodded, and not less than 12 feet wide on top.

i. Pit shed.—A small house or shed should be built in or near the target pit, in which the marking disks and signal flags and spare parts of the target frames for making immediate repairs should be stored. It should be sufficiently large to afford a shelter for the markers in case of a sudden storm.

j. Danger signals.—A socket for the staff of the danger signals should be placed on the markers' shelter in front of each target and so inclined that the flag will always fall clear of the staff and be readily seen. This flag will always be displayed when the target is in place and not in use. In addition to the danger signals at the targets, one or more danger signals will be displayed near the range to warn passers-by when firing is in progress. These signals will not be placed in such a position as to serve as streamers for judging wind on the range. They should be placed on the roads or on the crest of the hill where they can be plainly seen by those passing.

k. Range house.—On large ranges where competitive firing is held, a house containing a storeroom and several office rooms should be erected in some central place, off the range, but in its immediate vicinity. Such facilities as will enable visitors to witness the firing satisfactorily should also be provided.

l. Telephone service.—Ranges should be equipped with a telephone system, connecting the target pit with each firing point, the range house, and the post. The number of telephones should not be less than 1 to each 10 targets.

m. Electric bells.—On large ranges the installation for each five targets of an electric bell, that can be controlled from a central point in the pit, adds materially to the celerity and uniformity of target manipulation for rapid fire.

n. Covered ways between pits.—Where the pits are in echelon, covered ways or tunnels should be provided between the various

pits. This construction will allow the pit details to be shifted with safety without interrupting the firing.

o. Scorers' tables and cleaning racks.—The range will be provided with scorers' tables, benches, and cleaning racks.

Section X

ADVICE TO OFFICERS IN CHARGE OF RIFLE INSTRUCTION

181. *Provisions not mandatory.*—The provisions of this section are given as a guide and will not be considered as having the force of regulations. They are particularly applicable to emergency conditions when large bodies of men are being trained under officers and noncommissioned officers who are not thoroughly familiar with the training methods.

182. *Size of the class.*—*a.* The size of the class will depend largely upon local conditions, such as the size of the range, the number of men to be instructed, and the duty being performed by the troops.

b. Where range facilities permit, it is best to have an entire battalion go through target practice, the battalion being relieved from routine garrison duty during the period of preparatory training and range firing.

c. In a post garrisoned by more than one regiment, one battalion at a time on the range from each regiment would be the usual procedure, where range facilities are ample and the range is close to the post.

d. In batallion or two-company posts half the garrison should be on the range at a time.

e. At one-company posts the entire company will usually undergo rifle practice during the same period.

183. *Place of assembly for lectures.*—Any small ravine or cup-shaped area makes a very good amphitheater for giving the lecture in case no suitable building is available. As a rule a natural amphitheater that is better suited to this purpose than a building can usually be found near each post or camp.

184. *Assistant instructors.*—*a.* It is an advantage to have the officers and noncommissioned officers trained in advance in the prescribed methods of instruction. When troops are taking up rifle training for the first time, such training is not always practicable, nor is it absolutely necessary. A good instructor can give a very clear idea of how to carry on the work in his lecture and demonstration preceding each step. In the super-

vision of the work following the demonstration, he can correct any mistaken ideas or misinterpretations.

b. When one instructor is conducting successive organizations through target practice, it is advisable to attach to the first organization taking the course officers and noncommissioned officers of the companies that are to follow for the period of preparatory firing and for a few days of range firing. These act as assistant instructors when their own companies take up the work. Such assistants are particularly useful when one group is firing on the range and another is going through the preparatory exercises, both under the supervision of one instructor. By attaching an officer from each company and a noncommissioned officer from each platoon to groups preceding their units on the range, an adequate corps of assistants can soon be built up.

185. *Inspection of equipment.—a.* The instructor should personally inspect the equipment for the preparatory exercises before the training begins. This equipment is often so carelessly made that it is practically useless. A set of model equipment should be prepared in advance by the instructor for the information and guidance of the organizations about to take up the preparatory work. The sighting bars must be made as described, and the hole representing the peep sight must be absolutely circular. If the sights are made of tin, the holes should be bored by a drill in order to have them absolutely round. Good rear sights can be made for the sighting bars by using cardboard and cutting the holes with a punch for cutting wads for 10-gauge shotgun shells. These punches are cheap and can be obtained at almost any hardware store. The sighting disks for short distances must have a perfectly round black bull's-eye, with a background of white paper or target paper. Bull's-eyes painted on a white disk are not satisfactory; they get dirty very quickly so that the outlines are not distinct. Bull's-eyes cut out of black paper with a shotgun-wad cutter and pasted on white paper make satisfactory aiming points either to paste on the face of the disk or to use in position and trigger-squeeze exercises, when small gallery targets are not available for this purpose.

b. All equipment used in the preparatory exercises must be accurate and have the appearance of being carefully made. One of the objects of these exercises is to cultivate a sense of exactness and carefulness in the minds of the men undergoing instruction. They can not be exact with inexact instru-

ments, and they will not be careful when working with equipment that looks carelessly made.

186. *Inspection of rifles.*—No man is required to fire with an unserviceable or inaccurate rifle. All rifles should therefore be carefully inspected far enough in advance of the period of training to permit organization commanders to replace all inaccurate or defective rifles. Rifles having badly pitted barrels are not accurate and should not be used.

187. *Ammunition.*—The careful officer will take pains to see that the best ammunition available is reserved for record firing and that the men have a chance to learn their sight settings with that ammunition before record practice begins. Ammunition of different makes and of different lots should not be used indiscriminately.

188. *Organization of the work in preparatory training.*—*a.* The field upon which the preparatory work is to be given should be selected in advance and a section of it assigned to each organization. The equipment and apparatus for the work should be on the ground and in place before the morning lecture is given, so that each organization can move to its place and begin work immediately and without confusion.

b. Each company should be organized in two lines, 10 to 15 yards apart, and facing away from each other. In this way the company officers and other instructors, whose position is normally between the lines, have all of their squads under close supervision.

c. The arrangement of the equipment is as follows:

(1) On each line are placed the sighting bars and rifle rests, at sufficient intervals to permit of efficient work.

(2) Fifty feet from each line are placed a line of small boxes with blank paper tacked on one side, one box and one small sighting disk to each rifle rest.

(3) To one side of each box a tall stake, about 8 inches wide, is driven into the ground. On each stake are three aiming targets, placed at the proper height for aiming from the prone, sitting, and standing position.

(4) Two hundred yards from each line is placed a line of frames suitable for 200-yard triangle exercises, one frame to each squad. These frames have blank paper tacked or pasted on the front. A 10-inch sighting disk is placed with each frame. Machine-gun targets make acceptable frames for this work.

d. In rapid-fire exercises the company is organized in one line, with D targets placed 200, 300, and 500 yards away.

e. When sufficient level ground is not available for the above arrangement, the organizations will have to vary from it in some particulars. It will nearly always be found, however, that all of the work except the long-range triangle work can be carried on in two lines.

189. *Organization of the work in range practice.—a.* The range work should be so organized that there is a minimum of lost time on the part of each man. Long periods of inactivity while awaiting a turn on the firing line should be avoided. For this purpose no more men should be on the range at one time than the number of targets available can accommodate efficiently and waiting periods should be utilized in some form of instruction.

b. The local conditions and the nature of the ground in the vicinity of the range will largely influence the means used to prevent loss of time.

c. As a general rule, eight men per target is about the maximum and four men per target the minimum for efficient handling.

d. When men are not in the pit or on the firing line their time can be spent in rapid-fire exercises, in sight-setting and sight-changing exercises, in preparatory exercises for pistol firing or actual pistol practice, in theoretical instruction in the use of the automatic rifle, in practice in estimating distance, in preparatory individual musketry exercises, or in such other forms of training as they need and the ground permits.

e. Whatever means are employed to occupy this time the work must be well organized under a competent instructor, and must be made interesting to the men. To go through an exercise in a perfunctory way merely to occupy the time is worse than useless.

f. When it is desired to carry on pistol firing at the same time as rifle firing there may be a line of pistol targets set on the ground and to the flank of each rifle firing point, the pistol range being separated from the rifle range by 50 to 100 yards and the firing point being on the same line.

g. In rapid fire it is advisable to have on the line the order that is next to fire and to have them practice with dummy ammunition or simulated fire. When the size of the firing point makes this action impracticable each order should be given

a score of simulated fire before firing with ball cartridges or with ball and range dummy cartridges mixed.

h. The following method of carrying on range practice has been found to produce uniformly excellent results when the full allowance of time is devoted to the training.

(1) Organizations camp on the range (if it is more than a mile from the post).

(2) Firing is begun by a group consisting of approximately half of each organization. This group is made up of those proven to be the best by the examination on preparatory work and those known to be good shots. Under ordinary circumstances an allowance of from four to six men per target would result. The men who are not included in this first group make up all the pit details and undergo additional preparatory training particularly in rapid fire.

(3) At the end of from six to nine days' training all of the first group, except those few who have not been shooting well, fire for record.

(4) The second group, made up of those who have not fired and those who were rejected from the first group, now begins firing. The men who have completed record firing perform all fatigue.

(5) After about 10 days all of this second group, who have been shooting well and have a very good chance to qualify, fire for record.

(6) During the remainder of the allotted time the efforts of the officers and noncommissioned officers are concentrated on the men who were not ready to fire for record with the second group. This last group fires for record by the end of the allotted time for range practice.

i. When range facilities are such that the entire organization can fire at one time without having more than six, or at the most eight, men per target, the same general scheme as that outlined above may be applied as follows:

(1) Firing is begun with all of the men of the organization taking part.

(2) At the end of about 10 days, from one-third to one-half of the men, selected from those making good scores, fire for record.

(3) At the end of about 20 days, from one-half to two-thirds of the remainder of the organization fire for record.

(4) The efforts of the instructors are concentrated on the remnant of the organization for the rest of the allotted time.

190. *Model schedules.*—The following schedules are suggested as guides:

a. For a 6-weeks' course.

NOTE.—Eight or ten days are devoted to preparatory exercises and the rest of the time to range practice.

MONDAY

Lecture to assembled command	7.30 a. m. to 8.30 a. m.
First, second, and third sighting exercises	8.30 a. m. to 11.30 a. m.
Continuation of morning's work, including 200-yard triangle exercise	1 p. m. to 4 p. m.

TUESDAY

Lecture to assembled command	7.30 a. m. to 8.30 a. m.
Position exercises in prone position, with and without sandbag	8.30 a. m. to 11.30 a. m.
Exercise in all positions and in taking position rapidly	1 p. m. to 4 p. m.

Sighting exercises are also carried on during the entire day.

WEDNESDAY

Lecture to assembled command	7.30 a. m. to 8.30 a. m.
Trigger-squeeze exercise in the prone position, with and without sandbag	8.30 a. m. to 11.30 a. m.
Trigger-squeeze exercises in all positions	1 p. m. to 4 p. m.

Long-range triangle exercises are carried on during the entire day.

THURSDAY

Lecture to assembled command	7.30 a. m. to 8.30 a. m.
Bolt-manipulation exercise	8.30 a. m. to 11.30 a. m.
Rapid-fire exercise	1 p. m. to 4 p. m.

Long-range triangle exercises during the day if necessary.

FRIDAY

Lecture to assembled command	7.30 a. m. to 8.30 a. m.
Sight-setting and sight-changing exercise	8.30 a. m. to 9.30 a. m.
Score-book exercise	9.30 a. m. to 11.30 a. m.
Rapid-fire exercise	1 p. m. to 4 p. m.

Additional practice in all of the preceding exercises, each man receiving instruction on the points in which he is most backward.

The exercises in sight setting and sight changing and the use of the score book may be held on any day during the preparatory period when inclement weather requires indoor work.

SATURDAY

Review of all previous work and additional rapid-fire exercise	8 a. m. to 11.30 a. m.

MONDAY

Final examination on preparatory work by platoon and company commanders	7.30 a. m. to 11.30 a. m. 1 p. m. to 4 p. m.

Each man will be examined by the squad leader before being turned over to an officer for examination. Review of previous work and additional rapid-fire exercises for all men while not undergoing examination.

TUESDAY

Continuation of Monday's work	7.30 a. m. to 3 p. m.

WEDNESDAY

Lecture to assembled command	7.30 a. m. to 8.30 a. m.
Range firing	8.30 a. m. to ———.

b. A shorter course than 6 weeks.—(1) In a 4-weeks' course the schedule of preparatory work would be the same as for a 6-weeks' course except that the examination on preparatory work should be completed on Saturday and the following Monday.

(2) In a 2-weeks' course the schedule of preparatory work would be the same as for a 6-weeks' course except that the

examination on preparatory work should be completed on Saturday.

191. *Value of lectures.*—The lectures at the beginning of each step are an important part of the instructional methods. They are valuable in peace times and absolutely necessary in war times.

192. *Method of giving lectures.*—*a.* The lectures should be given to the assembled command or group undergoing preparatory rifle training up to and including a regiment or body of recruits of similar size.

b. The best-qualified officer should be selected to make the talks and give the demonstrations for the entire group undergoing training. When a battalion takes up rifle training, the talks and demonstrations should not as a rule be made by the captain or a lieutenant of each company. There is usually one officer available who by reason of his knowledge of the methods, and particularly of his personality, force, and clearness of diction, is better equipped than anyone else to do this work. This officer should be detailed for this duty and should make his talks and demonstrations to the assembled units. It is not necessary that he be an expert shot.

c. The notes on lectures which follow are to be used merely as a guide. The points which experience has shown to be the ones which usually require elucidation and demonstration are placed in headings in italics. The notes which follow each heading are merely to assist the instructor in preparing his lecture. The lecturer should know in advance what he is going to say on the subject. Under no circumstances will he read over to a class the outlines for lectures contained herein, nor will he read a lecture prepared by himself. During the lecture the headlines in italics made out by himself serve as a guide as to the order in which the subjects are to be discussed. If he can not talk interestingly and instructively on each subject without further reference to notes he should not be giving the lectures at all.

d. The one important thing is to show the men undergoing instruction, by explanation and demonstration, just how to go through the exercises and to tell them why they are given these exercises.

193. *First lecture—Sighting and aiming.*—*a.* The class is assembled in a building or natural amphitheater in the open where all can hear the instructor and see the demonstrations.

b. The following equipment is necessary for the demonstrations:

(1) One sighting bar.
(2) One rifle rest.
(3) One rifle.
(4) One small sighting disk.
(5) One 10-inch sighting disk.
(6) One small box.

c. The following subjects are the ones usually discussed in the first lecture:

(1) *Value of knowing how to shoot.*

(*a*) The rifle is the principal weapon in war. All other arms are auxiliary to the rifle.

(*b*) The value of rifle fire was proven in the World War. When rifle fire was used to cover advances, objectives were gained with comparatively light losses.

(*c*) Rifle firing is good sport.

(*d*) Knowledge gained valuable to big-game hunters.

(2) *The object of target practice.*

(*a*) To teach men how to shoot.

(*b*) To show them how to teach others.

(*c*) You men are our future instructors in time of war.

(3) *Any man can be taught to shoot well.*

(*a*) Shooting is a purely mechanical operation which can be taught to anyone physically fit to be a soldier.

(*b*) It requires no inborn talent such as to play a violin or paint a picture.

(*c*) These are only a few simple things to do to shoot well, but these things must be done in a manner exactly right. If they are done in a manner only approximately right, the results will be poor.

(4) *Automobile example.*

(*a*) Any average man can be taught to run an automobile in two weeks.

(*b*) Shooting is a less complicated mechanical operation and can be learned as quickly. But the man must be taught. Mere expenditure of ammunition, without proper instruction, does more harm than good.

(5) *Method of instruction.*

(*a*) Same as in teaching any mechanical operation.

(*b*) The instruction is divided into steps. The man is taught each step and practices in it before going to the next step. When he has been taught all of the steps he is taken to the rifle range to apply what he has learned.

(*c*) If he has been properly taught the various preparatory steps he will do good shooting from the very beginning of range practice.

(*d*) Explain coach and pupil method. Why used.

(6) *Men reflect attitude of instructor.*—If the instructor is interested, enthusiastic, and energetic the men will be the same. If the instructor (squad, section, or platoon leader) is inattentive, careless, and bored the men will be the same and the scores will be low.

(7) *Examination of men on preparatory work.*—Each man is examined in the preparatory work before going to the range. An outline of this examination is given in paragraph 245. The questions and answers in this paragraph are of material assistance while going through the exercises of each step. Refer to them constantly during the preparatory period.

(8) *Method of marking blank form.*—Explain blank form, paragraph 246. Explain marking system by the use of a blackboard if available.

(9) *Five essentials to good shooting.*

(*a*) Correct sighting and aiming.

(*b*) Correct position.

(*c*) Correct trigger squeeze.

(*d*) Correct application of rapid-fire principles.

(*e*) Knowledge of proper sight adjustments.

(10) *To-day's work.*—First step, sighting and aiming.

(11) *Demonstration of first sighting and aiming exercise.*—Have a squad on stage or platform and show just how this exercise is carried on.

(12) *Demonstration of second sighting and aiming exercise.*—Assume that some of the squad have qualified in the first exercise. Put these men through the second sighting and aiming exercise and show just how it is done.

(13) *Demonstration of third sighting and aiming exercise.*

(*a*) Assume that some of the squad have qualified in the second sighting and aiming exercise. Put these men through the third sighting and aiming exercise and show just how it is done.

(*b*) Show how the squad is organized by the coach and pupil method so as to keep each man busy all the time.

(14) *Long-range triangle work.*—Show the class the disk for 200-yard triangle work. Explain how this work is carried on and why. Show some simple system of signals that may be used.

(15) *Final word.*

(*a*) Start keeping your blank form to-day.

(*b*) Organize your work so that all men are busy at all times.

(16) *Are there any questions?*

(17) *Next lecture will be to-morrow* (*or* ———).—State hour and place.

194. *Second lecture—Positions.*—*a.* The following equipment is necessary for the demonstrations in this lecture:

(1) One rifle with sling.

(2) One sandbag.

(3) One box with small aiming target.

(4) One aiming device.

(5) Material for blackening sights.

b. The following subjects are the ones usually discussed in the second lecture:

(1) *Each step includes all that has preceded.*

(*a*) Each step must be thoroughly learned and practiced or the instruction will not be a success.

(*b*) Instruction in positions involves correct aiming.

(2) *Necessity for correct position.*—No excellent shot varies from the normal positions. Few men with poor positions are even fair shots. Few men with good positions are poor shots.

(3) *Blackening the sights.*—Explain why this is done and demonstrate how it is done.

(4) *The gun sling.*—Demonstrate both of the gun-sling positions and explain why they are used, and when each is used.

(5) *Taking up the slack.*—Show the class the slack on the trigger. Explain why it is taken up in the position exercises. (Can not begin to squeeze the trigger until the slack has been taken up.)

(6) *Holding the breath.*—Explain the correct manner of holding the breath and have the class practice it a few times. Explain how the coach observes the pupils' breathing by watching their backs.

(7) *Aiming device.*—Show how it is placed on the rifle and how it is used.

(8) *Position of the thumb.*—May be either over the stock or along the side of the stock. Explain why.

(9) *Joint of the finger.*—Trigger may be pressed with first or second joint. Second joint preferable when it can be done conveniently.

(10) *Prone position.*

(*a*) Demonstrate correct prone position, calling attention to the elements which go to make up a correct prone position; gun sling properly adjusted, body at the correct angle, legs spread well apart, position of the butt on the shoulder, position of the hands on the rifle, position of cheek against the stock, position of elbows.

(*b*) Mention the usual faults which occur in prone position.

(*c*) Demonstrate the correct position again.

(11) *Sandbag rest position*

(*a*) Demonstrate in the same manner as described above for prone position.

(*b*) Demonstrate coach adjusting sandbag to the pupil.

(12) *Sitting position.*—Demonstrate in the same manner as described above for the prone position.

(13) *Kneeling position.*—Demonstrate in the same manner as described above for the prone position.

(14) *Standing position.*—Demonstrate in the same manner as described above for the prone position.

(15) *Assuming the prone position rapidly.*

(*a*) Prone position can be assumed and an aimed shot fired more rapidly than from any other position.

(*b*) Its application in war.

(*c*) Demonstrate first by the numbers and then as one smooth movement.

(16) *To-day's work—Position exercises.*

(*a*) Demonstrate the duties of a coach in a position exercise, calling attention to each item.

(*b*) Demonstrate the position of the coach. Always placed so that he can watch the pupil's finger and eye.

(*c*) Place a squad on an elevated platform and show how the squad leader organizes it by employing the coach and pupil method, so as to keep every man occupied.

(*d*) Continue the long-range triangle work to-day.

(17) *Do not squeeze the trigger to-day.*—Take up the slack in these exercises but do not squeeze the trigger.

(18) *Keep the blank forms up to date.*—Examine each man in the squad at the end of the day's work and assign him a mark.

(19) *Are there any questions?*

(20) *Next lecture will be to-morrow* (*or* ———).—State hour and place.

195. *Third lecture—Trigger squeeze.—a.* The following equipment is necessary for the demonstrations:

(1) One rifle with sling.
(2) One aiming device.
(3) One sandbag.
(4) One box with small aiming target.

b. The following subjects are the ones usually discussed in the third lecture:

(1) *Trigger squeeze most important.*—Read paragraph 224.

(2) *Sandbag rest.*—Explain why it is used in trigger-squeeze exercise.

(3) *Machine rest example.*—Lay the rifle on the table, pointing down the room and toward an imaginary target; assume that it is in a machine rest which runs on a track parallel to the line of targets; assume that you fire a shot which hits the left edge of a 36-inch bull's-eye 1,000 yards away; then move the rifle 36 inches to the right on the table as if it were sliding along the parallel track and assume that another shot is fired. Where does it hit? Answer: The right edge of the bull's-eye. Move the rifle backward and forward between these two positions and assume a shot is fired any time while it is moving. Where will it hit? Answer: In the bull's-eye. Now assume that you hold the butt of the rifle still and move the muzzle a fraction of an inch. Where will it hit? Answer: It will miss the whole target. It hits the target when the whole rifle moves, but misses it when only one end moves.

(4) *Pulsations of body are more or less parallel.*—The natural movements of the body and its pulsations produce more or less parallel movement of the rifle. Very often men wo are apparrently very unsteady make good scores. You thus see that if you squeeze the trigger so as not to know when the rifle will go off, the shot is displaced only by the amount of the parallel movement and will be a good one. But if you give the trigger a sudden pull, or flinch, you deflect one end of the rifle, and the shot will be a poor one.

(5) *Any man can aim and hold.*—If he is physically fit to be a soldier he can easily learn to hold a good aim for quite a long time—15 to 20 seconds at least. Poor shots are the men who spoil this aim when they set the rifles off.

(6) *Coach squeezing the trigger.*

(*a*) The fact that when the coach squeezes the trigger for the firer the shot is almost invariably a good one proves that poor shooting is all due to errors in the trigger squeeze.

(*b*) It is not necessary for the coach to watch the sights through the aiming device. By watching the firer's back he knows when he is aiming and then presses steadily on the trigger. Demonstrate how it is done.

(7) *All men are flinchers.*—Flinching is an instinctive and subconscious act which no man can control. Any man who gives the trigger a sudden pressure will flinch. Excellent shots are the men who avoid this flinching by pressing the trigger in such a way as not to know when the discharge will take place.

(8) *When the rifle goes off before the man is ready.*—Often a man who has been doing poor shooting will state, upon firing a shot, "I can not call that shot. It went off before I was ready." Almost invariably these shots are well placed. His poor shooting has been caused by "getting ready" for them.

(9) *Calling the shot.*—Explain calling the shot, and why it is done.

(10) *To-day's work—Trigger-squeeze exercise.*

(*a*) Demonstrate the duties of a coach in a trigger-squeeze exercise by calling attention to each item.

(*b*) The work is carried on as in position exercises, with the squeezing of the trigger added.

(*c*) Practice in the prone position only this morning, first with, then without, the sandbag.

(*d*) Finish up the long-range triangle work to-day.

(11) *Keep the blank forms up to date.*—Examine each man in the squad at the end of the day's work and assign him a mark.

(12) *Final word.*—Don't let yourselves become bored with this work. It is easy to learn, but it takes a lot of practice to train the muscles and to get in the habit of doing the right thing without thinking.

(13) *Are there any questions?*

(14) *Next lecture will be to-morrow* (*or* ———).—State hour and place.

196. *Fourth lecture—Rapid fire.*—*a.* The following equipment is necessary for the demonstrations:

(1) One rifle with gun sling.

(2) Two clips of practice dummy cartridges.

(3) A short piece of cord.

b. The following subjects are the ones usually discussed in the fourth lecture:

(1) *Rapid fire true test of good shot.*—Superiority of fire in battle depends on the ability to deliver rapid and accurate fire.

(2) *Must be accurate fire.*

(*a*) Fire that is rapid without being accurate is of no value.

(*b*) Trigger squeezed the same as in slow fire.

(3) *Meaning of rapid fire.*—Rapid fire is merely continuous fire. The rapidity comes from working the bolt quickly, reloading the clips into the magazine smoothly, and keeping the eye on the target while operating the bolt.

(4) *Keeping the eye on the target.*

(*a*) Explain the advantages of this and how it gains time.

(*b*) Demonstrate the correct way to operate the bolt and the way a man does it who looks into the magazine each time.

(5) *Application in war.*—Explain the advantage of keeping the eye on the target in war.

(6) *Bolt-operation exercise.*

(*a*) Show how the trigger is tied back to the trigger guard and explain why.

(*b*) Demonstrate the exercise.

(7) *Operating the bolt in rapid fire.*—Show how it is done in the prone position and in the sitting positions, calling attention to the details in each case. (Trigger not tied in this demonstration.)

(8) *Great amount of rapid-fire practice necessary.*

(*a*) A smooth and rapid bolt operation on the part of a soldier materially increases his rapid-fire scores and his efficiency in battle.

(*b*) Practice in loading clips of cartridges into the magazine also necessary.

(9) *The correct position.*—Even if it takes a few seconds longer, get into the correct position before starting to shoot.

(10) *To-day's work—Rapid-fire exercise.*

(*a*) Explain how exercises are to be carried on.

(*b*) Demonstrate the duties of a coach in a rapid-fire exercise, calling attention to each item.

(*c*) First hour to-day will be given to bolt-operation exercise, and it will be repeated in short periods from time to time until each man qualifies.

(*d*) Some practice will be had in taking positions rapidly.

(11) *Keep the blank forms up to date.*—Examine each man in the squad at the end of the day's work and assign him a mark.

(12) *Are there any questions?*

(13) *Next lecture will be to-morrow* (*or* ———).—State hour and place.

197. *Fifth lecture—Effect of wind and sight—Sight changes—Score book.—a.* This part of the preparatory instruction can be given on any day in which the weather forces the work to be done indoors. If no bad weather occurs, this work should follow rapid-fire instruction.

b. The following equipment is necessary for the demonstrations:

(1) One A, B, and D target for each range at which each of these targets is to be used in range practice. These targets to be mounted on frames and marked with the proper windage and elevation lines.

(2) Ten spotters that can be readily stuck into the targets.

(3) Each man to have his rifle and a score book.

c. The following subjects are the ones usually discussed in the fifth lecture:

(1) *Targets.*

(*a*) Explain the divisions on the targets and give the dimensions of each.

(*b*) Call attention to windage and elevation lines. Have class compare them with diagram in the score book. Explain why lines are farther apart as the range increases.

(2) *Weather conditions.*—All weather conditions disregarded except wind.

(3) *Wind.*

(*a*) Explain how the direction of the wind is described.

(*b*) Explain how the velocity of the wind is estimated.

(*c*) Explain the effect of wind. Effect increases with distance from target.

(4) *Wind rule.*—State rule and explain it.

(5) *Wind-gauge rule.*—State rule and explain it.

(6) *Elevation rule.*—State rule and explain it.

(7) *Light.*—Explain effect.

(8) *Mirage.*—Tell what it is and how it assists riflemen.

(9) *Shooting up or down hill.*

(*a*) Explain the effect on elevation.

(*b*) Remember this rule when shooting at hostile airplane.

(10) *Score book.*

(*a*) Explain the uses of score book on range.

(*b*) Have class open score book and explain items of keeping a score point by point.

(11) *Exercises.*—Give the class a number of small problems along the lines of the examples in paragraphs 242 and 243, TR, as a demonstration as to how the day's work is to be carried on.

(12) *To-day's work.*

(*a*) Study and practice in sight setting, sight changing, and the use of score book. Squad leaders and other instructors will work up problems for their groups. Coach and pupil method is also used in which the coach states the conditions for the pupil.

(*b*) Additional practice in the exercises of the preceding days, and rapid-fire exercises.

(13) *Are there any questions?*

(14) *Next lecture will be to-morrow* (*or* ———).—State hour and place.

198. *Sixth lecture—Range practice.*—This lecture and demonstration should immediately precede range firing. If the class is not too large it should be given on rifle point of the rifle range.

a. The following equipment is necessary for the demonstrations:

(1) Material for blackening sight.
(2) One rifle with gun sling.
(3) One sandbag.
(4) One aiming device.
(5) Range dummy cartridges.

b. The following subjects are the ones usually discussed in the sixth lecture:

(1) *Preparatory work applied.*—Range practice is carried on practically the same as a trigger-squeeze exercise, except that ball cartridges are used.

(2) *Coaching.*

(*a*) Each man must be coached during each shot in instruction practice.

(*b*) Coach watches the man, not the target. Coach does not keep the score for the pupil. Pupil must make his own entries in his score book. Coach sees that he does this.

(3) *Officers and noncommissioned officers.*

(*a*) Supervise and prompt the men acting as coaches.

(*b*) Personally coach pupils who are having difficulty in making good scores.

(4) *Spotters.*

(*a*) Use in both slow and rapid fire.

(*b*) If a spotter near the edge of the bull's-eye bothers the pupil in aiming, it may be removed before he fires again.

(5) *Sandbag rest.*

(*a*) Explain why it is used the first day or two of range fire.

(*b*) Demonstrate a coach adjusting the sandbag to a pupil.

(6) *Watching the eye.*—Explain how this indicates whether or not the pupil is squeezing the trigger properly.

(7) *Position of the coach.*—Demonstrate in each one of the positions.

(8) *Demonstration of coaching in slow fire.*

(*a*) Place a man on the firing point and show just what a coach does by calling attention to each item (par. 261).

(*b*) Demonstrate the use of the aiming device.

(*c*) Demonstrate the use of dummy cartridges in slow fire.

(*d*) Demonstrate coach squeezing the trigger for pupil.

(9) *Demonstration of coaching in rapid fire.*—Same procedure as in paragraph 266.

(10) *Use of range dummy cartridges in rapid fire.*

(*a*) Show how range dummy cartridges are mixed with service cartridges for rapid-fire training and explain why this is done.

(*b*) Coaches will be alert in this kind of practice in order to prevent pupil from looking into the chamber.

(11) *Read final precautions for slow fire.*—See paragraph 262.

RIFLE—INDIVIDUAL

(T. R. 150–5)

		Paragraphs
SECTION I.	General provisions	199
II.	First step—Sighting and aiming	204
III.	Second step—Positions	207
IV.	Third step—Trigger squeeze	224
V.	Fourth step—Rapid fire	228
VI.	Effect of wind—Sight changes—Use of the score book	233
VII.	Fifth step—Examination of men before starting range practice	245
VIII.	Gallery practice	247
IX.	Range practice	251

SECTION I

GENERAL PROVISIONS

199. *Object of instruction.—a.* Military rifle training is divided into two parts, "rifle marksmanship," in which the men are taught, individually, to be good shots, and "musketry," in which they learn to act as a team under the leadership of the squad, section, and platoon leaders to obtain the maximum fire effect on an enemy.

b. Rifle marksmanship and musketry are inseparably related. Neither one alone will win battles without undue losses. In all training on the rifle range it must be borne in mind that the ultimate object is to make a team whose accurate fire can be controlled, directed, and distributed in battle by a leader.

c. This part deals only with rifle marksmanship.

200. *Basis of instruction.—a.* Rifle firing is a mechanical operation which anyone who is physically and mentally fit to be a soldier can learn to do well if properly instructed. The methods of instruction are the same as those used in teaching any mechanical operation. The soldier is taught the various steps in their proper order. He is carefully watched and is corrected whenever he starts to make a mistake.

b. Men instinctively do the wrong thing in firing the rifle. They give the trigger a sudden pressure, which is the cause of flinching. Consequently, men can not be taught to shoot by placing them alone on the firing line with ammunition to expend and targets at which to shoot in front of them. The idea that mere practice will ultimately make them perfect is wrong. Such procedure merely fixes the instinctive bad habits in the average man and makes it extremely difficult for anyone to teach him to shoot, even with the proper methods. If he has, however, been thoroughly instructed and drilled in the mechanism of correct shooting, and is then carefully and properly coached when he begins firing, the correct shooting habits rapidly become fixed and replace the instinctive incorrect habits that he would have developed if left alone.

c. It is much easier to make an excellent shot out of a man who has never fired a rifle than it is to correct the errors of a man who has done a good deal of shooting under improper supervision.

201. *Methods of instruction.—a. Phases.*—Rifle instruction is divided into two phases, "preparatory exercises" and "range firing." Practically everything is included under the heading of "preparatory exercises," because this is the period of training during which the man learns everything necessary to become a good shot. When he goes on the range he will be able to shoot well if he applies that which he has learned previously. If he has been properly instructed he will put into practice all the points laid down in the preparatory exercises, with the one possible exception of trigger squeeze, the most important of all. Trigger-squeeze errors must be looked for and corrected at the very beginning of the firing before they become fixed habits.

(1) The preparatory exercises have a twofold purpose: First, to teach the man the correct way to do each of the essentials; second, to drill him in the correct method of doing these essentials until they become fixed habits.

(*a*) The preparatory exercises constitute five distinct steps and should be given in a concentrated period of time—

1. Sighting and aiming exercises.
2. Position exercises.
3. Trigger-squeeze exercise.
4. Rapid-fire exercises.
5. Examination of men before starting range practice.

(*b*) In addition, the following subjects will be taken up during the preparatory period: Definitions, nomenclature, care of rifle, effect of wind, use of score book, and sight changing. These items do not pertain particularly to any one step, but will be taken up before the examination. As a rule, the time spent indoors during inclement weather can be utilized in the study of these subjects.

(*c*) Each step of the first four starts with a lecture by the instructor to the assembled command. This talk includes a demonstration of the work being taken up. The demonstration should be made by a squad which the instructor puts through the exercises that are to oconstitute the day's work. He shows exactly how to do each of the exercises about to be taken up and explains why they are done and their application to rifle shooting. He shows how the corporal organizes the work in the squad so that no men are idle and how they coach each other when they are not under instruction by an officer or noncommissioned officer.

(*d*) These talks and demonstrations are an essential part of the training. If properly given they awaken the interest and enthusiasm of the whole command for the work and give an exact knowledge of how each step is to be carried on, something that men can not get from reading a description, no matter how accurate and detailed that description may be.

(*e*) The instructor who gives these talks and demonstrations may be the platoon leader of his platoon, the company commander of his company, or the battalion commander of his battalion; or he may be an especially qualified officer who has been detailed as officer in charge of rifle instruction. The instructors who apply the demonstrated exercises to the men of the command are the officers and noncommissioned officers of the companies undergoing instruction.

(*f*) The number of men who can be taught to shoot at one time by a good instructor is limited only to those who can hear his voice and see the demonstration. Regiments of over 3,000

officers and men who were totally ignorant of shooting matters have been put through preliminary work and range practice under one instructor with excellent results. As only one step is taken up at a time and as each step begins with a lecture and a demonstration showing exactly what to do, the officers and noncommissioned officers, although not previously instructed, can carry on the work under the supervision of the instructor. It is best, of course, to have the officers and noncommissioned officers instructed in advance, but such a course is not essential where armies are being hastily organized and time is not available.

(*g*) The instruction must be thorough and it must be individual. Each man must understand every point and must be able to explain each one in his own words.

(*h*) The blank form shown in paragraph 246 must be kept by each squad leader and by each platoon leader independent of the squad leader. This blank form shows at a glance just how much each man knows about each point.

(*i*) Each man must be brought to as high a state of proficiency on all of the enumerated points as the time allowed for preparatory work will permit. The company commander will carefully supervise the work. He will pick out men at random through the different platoons from time to time and put them through a test to see if the instruction is thorough and is progressing satisfactorily.

(*j*) The importance of exactness should be impressed on the men at all times. For example, men in adjusting the sights in the sighting drills or triangle exercises are apt to say, "That is about right." There is no such thing as a sight that is about right; it is absolutely right or it is all wrong. Exactness in every detail is hard to get, but it must be attained.

(*k*) Interest and enthusiasm must be sustained and everything possible should be done to stimulate them. If the exercises are gone through in a manner approximately correct and as a routine piece of work, the results will be very disappointing. As soon as these exercises deteriorate into a perfunctory performance of physical exercise they do more harm than good.

(*l*) Careful attention will be paid to the essential points as shown in the form of questions and answers under the heading, "Examination." (See par. 245.) This will be consulted by the instructor during each step of the preparatory work. Each man will be put through a thorough test along the line indicated in these questions and answers before he is allowed to fire.

(*m*) The most important point of all is the trigger squeeze, and every effort should be made at the very beginning of range practice to correct trigger-squeeze errors. The best method of correcting "flinching," which is always the visible sign of trigger-squeeze error, is for the coach to press the trigger while the man under instruction holds and aims the rifle.

(*n*) Whenever a man is in a firing position, whether it be at preparatory exercises, at gallery practice, or on the range, a coach will be placed beside him to watch him and point out his errors. The coach will watch the man himself. If a coach watches the target, he is of no assistance to the man firing.

(*o*) Every man who is to fire on the range will be put through the entire preparatory course. No distinction will be made between recruits and men who have had range practice, no matter what their previous qualification has been. Some part of the preparatory instruction may have escaped them in previous years; it is certain that some of it has been forgotten, and in any case it will be helpful to go over it again and refresh the mind on the subject.

(*p*) When necessary and when time permits, all of the noncommissioned officers of the company should be put through a course of instruction and required to pass a rigid test before the period of preparatory training for the company begins.

(2) Range practice is taken up immediately after completion of the preparatory exercises.

b. Coach and pupil method.—Instruction is carried on throughout the entire period of training by the "coach and pupil method." Under this method the men undergoing instruction are grouped in pairs and take turns in watching and coaching each other. The man undergoing instruction is called the pupil. The man giving instruction is called the coach. When the men of a pair change places the pupil becomes the coach and the coach becomes the pupil. The squad leaders and commanders of higher units are the instructors. The instructors supervise and prompt the men who are acting as coaches.

202. *Duties of leaders and commanders.—a. Squad leader.*—(1) Organizes the work in his squad so that each man is occupied during the preparatory period in the prescribed form of training for target practice.

(2) Examines each man in his squad at the end of the training on each preparatory step and assigns him a mark in the proper place on the blank form. (See par. 246.)

(3) Sees that each man takes proper care of his rifle and that he cleans it at the end of each day's firing.

(4) Enforces correct aiming, position, and trigger squeeze when fire is simulated in drills and maneuvers.

b. Sergeant.—Assists the squad leaders and performs any other duties assigned him by the platoon and company commanders.

c. Platoon leader.—Supervises and directs the squad leader in training his squad; personally checks each man in his platoon on the points enumerated in the blank form shown in paragraph 246; and examines each man along the lines outlined in paragraph 245.

d. The company commander.—Requires the prescribed methods of instruction and coaching to be carried out carefully and in detail; supervises and directs the squad and platoon leaders; in companies of less than 60 men, performs the duties prescribed above for platoon leaders; and so instructs the company that it will never fall below the minimum standard prescribed.

e. The battalion commander.—Requires the officers and noncommissioned officers to be familiar with, and understand, the prescribed methods of instruction and coaching; supervises the instruction within his battalion and requires the companies to follow out the preparatory exercises and methods of coaching carefully and in detail.

f. The officer in charge of rifle instruction.—This officer is appointed by the post or regimental commander to supervise the preparatory work and range practice in the post or regiment when, in the opinion of the post or regimental commander, such action is advisable. Should an officer in charge of instruction be appointed, he will be selected for his ability as a rifle instructor, and should be an officer who has been through a course of instruction under the methods prescribed herein. His duties are as follows: To inspect the equipment for preparatory training 2 or 3 days in advance of the time such training is to begin; to see that it is properly made, and is serviceable and neat in appearance; to act as chief instructor for the organizations under his supervision; to assist the organization commanders in applying the proper methods; to correct errors and mistaken ideas on interpretations of the text; and to keep the regimental or post commander informed as to the progress being made during the preparatory period and range practice.

203. *Equipment for each squad.*

a. Two sighting bars complete.
b. Two rifle rests.
c. Two small sighting disks.
d. Four small aiming targets.
e. One 10-inch sighting disk.
f. Two small boxes.
g. One frame covered with blank paper for long-range triangles.
h. Two sandbags.
i. One aiming device.
j. Fifteen rounds practice dummy ammunition for each man.
k. One score book for each man.
l. Two blank examination forms for each squad.
m. One rapid-fire target with curtain for each three squads.
n. Eight feet of twine for tying triggers to trigger guard.
o. One each A, B, and D targets on frames for score-book exercises.
p. Material for blackening sights.

Section II

FIRST STEP—SIGHTING AND AIMING

204. *First sighting and aiming exercise* (see Pl. 1).—*a.* The squad leader or instructor shows a sighting bar to his squad or group and points out the front and rear sights, the eyepiece, and the removable target.

He explains the use of the sighting bar as follows:

(1) The front and rear sights on the sighting bar represent enlarged rifle sights.

(2) The sighting bar is used in the first sighting exercise because with it small errors can be easily seen and explained to the pupil.

(3) The eyepiece requires the pupil to place his eye in such position that he sees the sights in exactly the same alignment as seen by the coach.

(4) There is no eyepiece on the rifle, but the pupil learns by use of the sighting bar how to align the sights properly when using the rifle.

(5) The removable target attached to the end of the sighting bar is a simple method of readily aligning the sights on a bull's-eye.

b. The instructor explains the open and the peep sight to the assembled group, showing each man the illustrations of a correct sight alignment. (See figs. A, B, D, and E, pl. 2.)

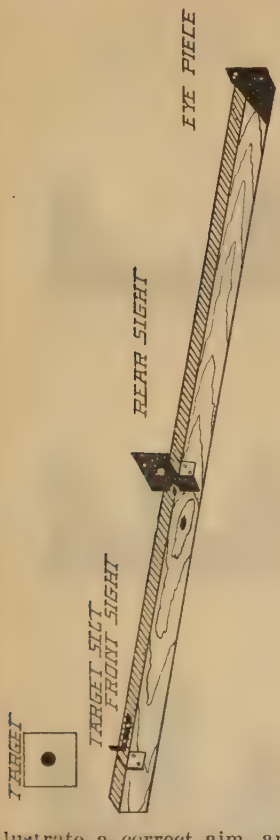


PLATE 1.—The sighting bar

c. The instructor, first with the peep sight and then with the open sight, adjusts the sights of the sighting bar, with target removed, to illustrate a correct alignment of the sights. He has each man of the assembled group look through the eyepiece at each of the sight adjustments.

d. The instructor adjusts the sights of the sighting bar with various small errors in sight alignment and has each man of the assembled group endeavor to detect the error.

e. The instructor describes a correct aim, showing the illustration to each man. He explains that the top of the front sight is seen through the middle of the circle and just touches the bottom of the bull's-eye, so that all of the bull's-eye can be clearly seen. (See figs. C and F, pl. 2.)

f. The instructor explains that the eye should be focused on the bull's-eye in aiming, and he assures himself, by questioning the pupils, that each man understands what is meant by focusing the eye on the bull's-eye.

g. The instructor adjusts the sights of the sighting bar and the removable target so as to illustrate a correct aim, and has each man of the group look through the eyepiece to observe this correct aim.

FRONT SIGHT



PEEP SIGHT

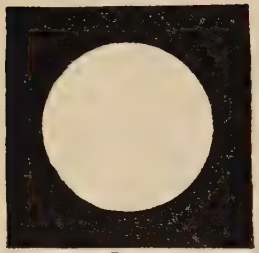


Fig. A



Fig. B



Fig. C

OPEN SIGHT

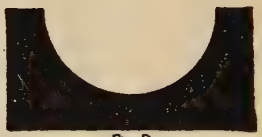


Fig. D



Fig. E



Fig. F

PLATE 2

h. The instructor adjusts the sights and the removable target of the sighting bar so as to illustrate various small errors and has each man in the group attempt to detect the error.

i. The exercise described above having been completed by the squad leader or other instructor, the men are placed in pairs and repeat the exercise by the coach and pupil method.

j. As soon as a pupil is considered proficient in the first sighting and aiming exercise he is put through the second and third sighting and aiming exercises by the instructor. Such pupils are then placed in pairs to instruct each other in these two exercises by the coach and pupil method.

205. *Second sighting and aiming exercise* (see pl. 2).—A rifle with sights blackened is placed in a rifle rest and pointed at a blank sheet of paper mounted on a box. (See pl. .) Without touching rifle or rifle rest, the coach takes the position illustrated and looks through the sights. The coach directs the marker by command or improvised signal to move the small disk until the bottom of the bull's-eye is in correct alignment with the sights (see Fig. C, pl. 2), and then commands: HOLD, to the marker. The coach moves away from the rifle and directs the pupil to look through the sights in order to observe the correct aim.

b. The marker moves the disk out of alignment. The pupil takes position and directs the marker to move the disk until the bottom of the bull's-eye is in correct alignment with the sights. The coach then looks through the sights to see if the alignment is correct.

c. The coach aligns the sights on the bull's-eye with various slight errors to determine whether or not the pupil can detect them.

206. *Third sighting and aiming exercise.*—*a.* The object of this exercise is to show the importance of uniform and correct aiming, and to instill into the mind a sense of exactness. At 20 feet and with a small bull's-eye, a man should be able to place all three marks so that they could be covered by the unsharpened end of a lead pencil (See pl. 3.)

b. This exercise is conducted as follows: The rifle with the sights blackened is placed in a rifle rest and pointed at a blank sheet of paper mounted on a box. The pupil takes the position illustrated and looks through the sights without touching the rifle or rifle rest. The pupil directs the marker, by command or improvised signal, to move the disk until the bottom of the bull's-eye is in correct alignment with the sights, and then com-



Fig. A



Fig. B

PLATE 3



PLATE 4

mands: HOLD, to the marker. The coach then looks through the sights to see if the alignment is correct. Then without saying anything to the pupil, he commands: MARK, to the marker. The marker, without moving the disk, makes a dot on the paper with a sharp-pointed pencil inserted through the hole in the center of the bull's-eye. The marker then moves the disk to change the alignment. The pupil and coach, without touching the rifle or rifle rest, repeat this operation until three dots, numbered 1, 2, 3, respectively, have been made. These dots are then joined together to form a triangle and the pupil's name written under it. The size and shape of the triangle will be discussed and the errors pointed out. This exercise will be repeated until proficiency is attained.

c. This exercise should also be held, during the period of the preparatory training, at 200 yards on a 10-inch movable bull's-eye (see Pl. 4), and if time permits, at 500 yards on a 20-inch movable bull's-eye. These long-range triangle exercises teach the men to aim accurately at a distant bull's-eye, the outlines of which are indistinct. If the exercise is properly handled it helps greatly to sustain interest in the work. At 200 yards a man should be able to make a triangle that can be covered with a silver dollar, and at 500 yards a triangle no side of which is over 2 inches long.

d. Tissue paper will be used to copy off each pupil's triangle at long range. The name of the pupil making the triangle will be written on the tissue paper under the triangle. These tracings are sent back to the firing line so that the pupil can see what he has done. The squad leader will turn over all triangles to the platoon leader for his inspection.

e. The sighting and aiming exercises, especially the 200-yard triangle work, will be carried on during the time devoted to the second and third step. The purpose of continuing these exercises is to bring backward men up to the proper state of proficiency and to assist in keeping the men interested.

f. Competition between the individuals of a squad to see which one can make the smallest triangle is of value in creating interest in this exercise.

Section III

SECOND STEP—POSITIONS

207. *Importance.*—Correct position is of great importance in teaching men to shoot. Instruction in position involves black-

ening the sights, use of the gun sling, taking up the slack, the correct manner of holding the breath, aiming and the use of the aiming device.

208. *Blackening the sights.*—In all preparatory exercises involving aiming and in all range firing, both sights of the rifle will be blackened. The blackening is done by holding each sight for a few seconds in the point of a small flame which is one of such a nature that a smooth uniform coating of lampblack will be deposited on the metal. There are a number of materials which give a flame of the right nature for this purpose. Among the most commonly used are: A candle, a piece of camphor, a wax match, a piece of pine wood full of pitch, a small piece of shoe paste, a rag saturated with any kind of oil. Some device must be provided to protect the flame from the wind.

209. *Gun sling.*—*a.* The gun sling is of great assistance in shooting. It helps to steady the rifle, presses the butt of the rifle against the shoulder with the same amount of force for each shot and reduces the effect of the recoil.

b. Each man will be assisted by the instructor in adjusting his sling which will be habitually carried with this adjustment. The gun sling will be tightened by means of the lower loop for drill or parade purposes without changing the adjustment of the upper loop. In a firing position, the sling should be as tight as it can be made and still allow the man to get into it readily. A properly adjusted sling will feel uncomfortable until the muscles of the arm become accustomed to the pressure.

c. There are two authorized methods of adjusting the sling—the "loop" adjustment and the "hasty sling" adjustment. The hasty sling is more rapidly adjusted than the loop sling, but it gives less support in positions other than the standing position. In range firing the loop sling will be used at all ranges except 200 yards standing. The hasty sling will be used on the range in the standing position at 200 yards. Instruction will be given in both sling adjustments. All men will be required to use one or the other form of gun-sling adjustment when firing or simulating fire in all problems and maneuvers.

(1) *The loop adjustment.*—(See Pl. 5.)

(*a*) Loosen lower loop.

(*b*) Put left arm through upper loop from right to left, so that the upper loop is near the shoulder and well above the biceps muscle.

(*c*) Pull leather keeper down, so that it will hold the upper loop in place.



PLATE 5.—The loop adjustment of the sling

(*d*) Move the left hand over the top of the gun sling and grasp the rifle near the lower band swivel so as to cause the sling to lie smoothly along the hand and wrist.

(*e*) Lower loop, not used in this adjustment, will be so loose as to prevent any pull upon it.

(2) *The hasty sling adjustment.*—(See Pl. 6.)

(*a*) Loosen the lower loop.

(*b*) Grasp the rifle just in rear of the lower band swivel with the left hand and grasp the small of the stock with the right hand.

(*c*) Throw the sling to the left and catch it above the elbow and high on the arm.

(*d*) Remove the left hand from the rifle, pass the left hand under the sling, then over the sling and regrasp the rifle with the left hand so as to cause the sling to lie along the hand and wrist.

The sling may be given one half turn to the left and then adjusted. This twisting causes the sling to lie smoothly along the hand and wrist. (See Pl. 7.)

210. *Taking up the slack.*—The slack is the first movement of the trigger which takes place when light pressure is applied. Taking up the slack is part of the position exercise because this play must be taken up by the finger as soon as the correct position is assumed and before careful aiming is commenced. The entire amount of slack in the trigger is taken up by one firm pressure of the finger. If the slack is taken up by a slow gradual pressure the pupil can not know when the entire amount of slack has been taken up.

211. *Holding the breath.*—*a.* Holding the breath in the proper manner, while aiming, is very important. It will be found that a large proportion of men in any group undergoing instruction in rifle practice do not know how to hold the breath in the proper manner. Each man must be carefully instructed and tested on this point. The correct manner of holding the breath must be practiced at all times during position and trigger-squeeze exercises and whenever firing or simulating fire.

b. To hold the breath properly, draw into the lungs a little more air than is used in an ordinary breath. Let out a little of this air and stop the rest by closing the throat, so that the rest of the air in the lungs will press against the closed throat. Do not hold the breath with the throat open or by the muscular action of the diaphragm as if attempting to draw in more air. The important point is to be comfortable and steady while aiming and squeezing the trigger.

212. *Use of the aiming device* (see Pl. 8).—This device will be used freely in the preparatory position, the trigger-squeeze exercise and gallery practice so as to instruct the men in aiming

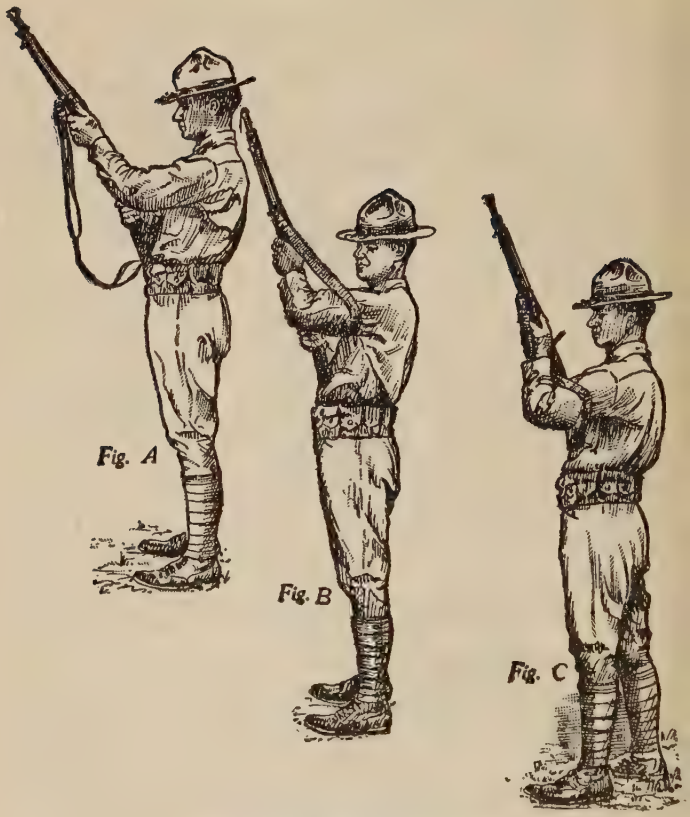


PLATE 6.—The hasty sling adjustment

and to correct errors. The device is a great help to the instructor in teaching men to shoot, both in preparatory work and in range practice. It is principally used in the position and

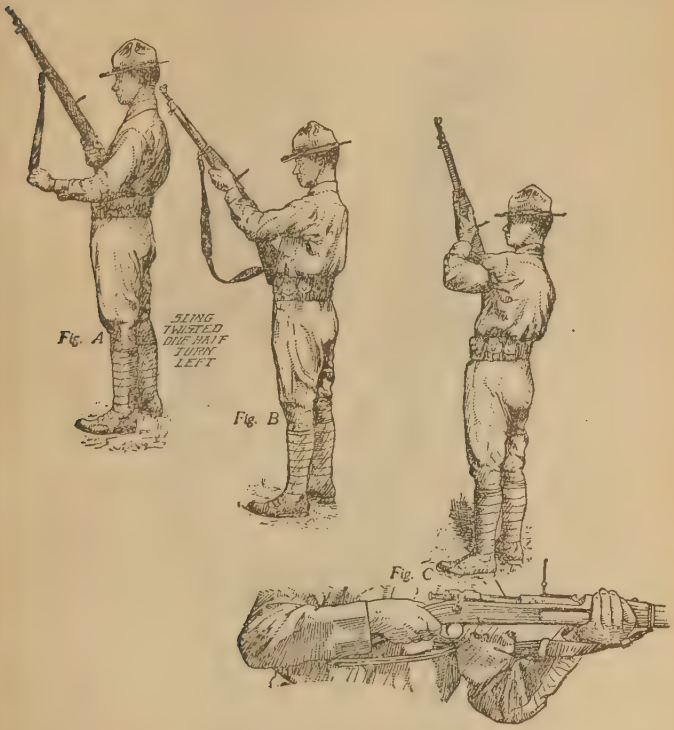


PLATE 7.—The hasty sling adjustment

trigger-squeeze exercise in the preparatory period. It can not be used to advantage on the range when there is a poor light on the target. It can always be used to good advantage in

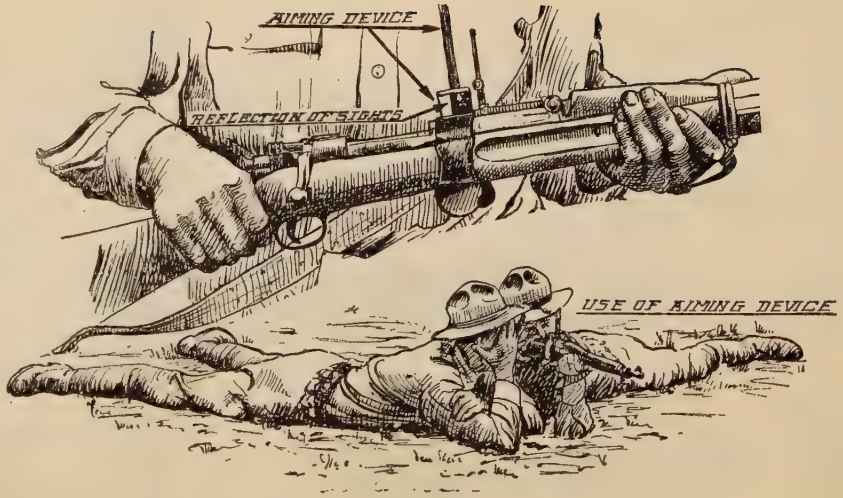


PLATE 8

the preparatory exercises because the small aiming bull's-eye is so close that outlines are distinct and the target can always be so placed as to be clearly seen. (For the exact method of using the aiming device, see questions and answers, paragraph 245.)

213. *General rules for positions.*—The following general rules are common to the prone, sitting, kneeling, and standing positions. They will be considered a part of each paragraph on positions and will be referred to when studying those paragraphs.

a. To assume any position, first half face to the right and then assume the position.

b. Upon assuming any position there is some point to which the rifle points naturally and without effort. If this point is not the center of the target the whole body must be shifted so as to bring the target into proper alignment. Otherwise the firer will be firing under a strain because he will be pulling the rifle on the target by muscular effort for each shot.

c. The right hand grasps the small of the stock. The right thumb may be either around the small of the stock or along the right side of the stock. The position of the thumb will be such as to prevent injury to the face in firing. Most riflemen place the thumb along the right side of the stock.

d. The left hand is against or near the lower band swivel, the rifle resting in the palm of the left hand.

e. The left elbow will be as nearly under the rifle as it can be placed without appreciable effort.

f. The trigger should ordinarily be squeezed with the second joint of the index finger. The first joint may be used by men the length of whose arm or the size of whose hand is such as to make it difficult to reach the trigger with the second joint, or to whom the first joint of the finger seems more natural and comfortable.

g. The cheek is always pressed firmly against the stock and placed as far forward as possible without straining. It is desirable to have the eye as near as possible to the rear sight.

h. Left-handed men should be trained to shoot in the right-handed position. If this change is found to produce poor results in the case of any man, he will be allowed to shoot in the left-handed position. But he must be given additional preparatory rapid-fire practice to attain rapidity in working the bolt.

i. Men who can not close the left eye may shoot in the left-handed position, but in practically all cases of this kind the

man can, by practice, acquire the ability to close the left eye or to shoot with both eyes open.

214. *Prone position* (see Pl. 9).—*a.* Body lying at an angle of 45° to the line of aim with the spine straight; legs well apart; inside of the feet flat on the ground, or as nearly so as is possible without strain; elbows well under the body, so as to raise the chest off the ground; right hand grasping the small of the stock; left hand near the lower band swivel, the rifle resting on the palm of the hand; cheek pressed firmly against the stock with the eye as near the cocking piece as it can be placed without straining; gun sling properly adjusted and tight enough to give firm support.

b. The elbows should not be unduly spread apart, because such separation results in an unsteady position and brings the chest so near the ground that the neck has to be strained backward in order to see through the sights. This strained position of the neck interferes with good vision and tends to make the firer unsteady. The exact angle of the arms to the ground will depend somewhat upon the conformation of the man. The right elbow should be so placed that the right upper arm will not form an angle of less than 45° with the ground.

c. The exact position of the left hand will depend on the length of arm and width of chest of the individual. It should be as near the lower band swivel as the conformation of the man will permit. The left hand will never be placed against, or near, the trigger guard.

d. A tight gun sling will feel uncomfortable until the muscles of the arm have become accustomed to the pressure. When the gun sling is properly adjusted, it is necessary to raise the right elbow from the ground in order to place the butt of the rifle against the shoulder readily.

215. *Sandbag rest position* (see Pl. 10).—*a.* The sandbag rest position conforms in every detail to the normal prone position described in the preceding paragraph, with the addition of a sandbag which supports the left forearm, wrist, and hand.

b. The bag is a little more than half full and tied near the top, so as to leave considerable free space above the sand.

c. It is important that the sandbag be high enough to permit the taking of the normal prone position. The natural tendency is to have a low rest and to be very flat on the ground with the elbows spread apart. This is a faulty position, which causes lower scores than if no rest at all were used. The



PLATE 9.—Prone position

sandbag when properly adjusted is a great help. When it is not properly adjusted it is a handicap.

d. The sandbag rest position is used in the first stages of a pupil's training, not to teach steadiness of holding but to teach



PLATE 10.—Prone position with sandbag rest

the correct trigger squeeze. By using the sandbag the slight unsteadiness of the hold is avoided and the temptation to try to snap in the shot at the instant the sights touch the bull's-eye, an action which causes all poor shooting, is eliminated.

e. The coach will adjust the sandbag as follows:

(1) Have the pupil assume the prone position and aim at the target.

(2) Set the sandbag on its bottom and arrange the sand so that it is slightly higher than the back of the pupil's left hand.

(3) Facing the pupil, straddle the rifle barrel and slide the sandbag against the pupil's left forearm, so that the narrow side of the bag supports his forearm and wrist and the back of his hand rests on top.

(4) Lower the sandbag to the proper height by pounding it with the hand.

216. *Sitting position* (see Pl. 11).—*a.* The firer sits half-faced to the right; feet well apart and well braced on the heels, which are dug slightly into the ground; body leaning well forward; both arms resting inside the legs and well braced; cheek pressed firmly against the stock and placed as far forward as possible without straining; left hand near the lower band swivel, the rifle resting on the palm of the hand.

b. The sitting position is used in the field when firing from ground that slopes downward to the front. In practicing this position the feet may be slightly lower than the ground upon which the pupil sits. Sitting on a low sandbag is authorized.

217. *Kneeling position* (see Pl. 12).—The firer kneels half-faced to the right on the right knee, sitting on the right heel; the left knee bent so that the left lower leg is vertical; left arm well under the rifle and resting on the left knee, with the point of the elbow beyond the kneecap; right elbow approximately at the height of the shoulder; cheek pressed firmly against the stock and placed as far forward as possible without strain. Sitting on the side of the foot instead of the heel is authorized.

218. *Standing position* (see Pl. 13).—The firer stands half-faced to the right; feet from 1 foot to 2 feet apart; body erect and well balanced; left elbow well under the rifle; left hand grasping the piece in front of the balance, rifle resting on the palm of the left hand, which grasps the piece in front of the balance; butt of the piece high up on the shoulder and firmly held; right elbow approximately at the height of the shoulder; cheek pressed against the stock and placed as far forward as possible without strain. A position with the left hand against or under the trigger guard and with the left upper arm sup-

ported against the body is not a practical field position and is prohibited.

219. *Positions in standing trench.—a.* These positions will vary according to the style of trench and build of the man. In

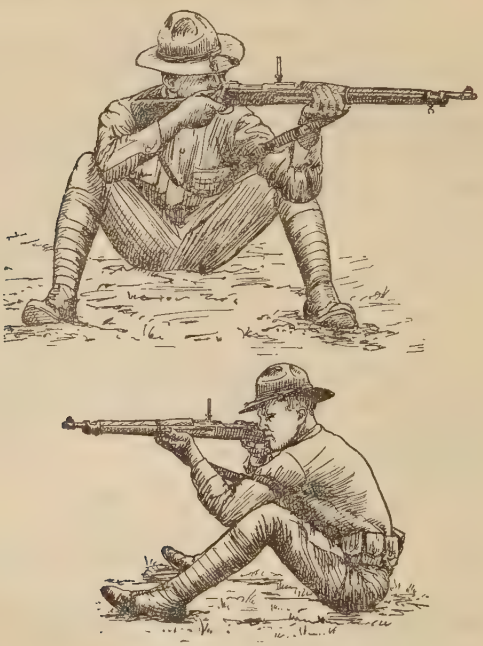


PLATE 11.—Sitting position

general, it is a good plan to have as many points of support for the body and arms as possible.

In a trench that has no berm for the left elbow the position is the normal standing position. The left hand is placed against the top of the parapet and the rifle, just beyond the hand, rests



PLATE 12.—Kneeling position

on the parapet. With the berm, the position is about the same except that the left elbow rests on the berm. When the berm



PLATE 13.—Standing position

is wide enough, as it often is, both elbows can be rested on it, in which case the position of the upper part of the body is about the same as in the prone position with the sandbag rest.

b. In all positions in a trench the soldier should lean well against the butt of the rifle to insure firmness and steadiness.

220. *Position exercises.*—Instruction in positions is the second step in the preparatory training and is conducted as follows:

a. The instructor assembles his squad or group, shows them the proper method of blackening the front and rear sights of the rifle, and has each pupil blacken his sights.

b. The instructor explains and demonstrates the hasty sling adjustment and assists each pupil to adjust his sling. He explains the loop sling adjustment and assists each pupil to adjust his sling.

c. The instructor explains and demonstrates the proper manner of taking up the slack and has each pupil practice it.

d. The instructor explains and demonstrates the proper manner of holding the breath and has each pupil practice it.

e. The instructor explains and demonstrates the use of the aiming device.

f. The instructor explains the general rules which apply to all positions.

g. The instructor explains and demonstrates the prone position, prone positions with sandbag rest, sitting, kneeling, and standing position. He has each pupil assume each of these positions and corrects any errors that exist.

h. The above points having been shown to the assembled group, the instruction becomes individual by the coach and pupil method supervised by the instructor. Small aiming bull's-eyes are used for this instruction. These bull's-eyes must be placed at different heights so that in aiming from the various positions the rifle will be horizontal.

221. *Duties of the coach in position exercises.*—In the position exercises the coach watches the following points:

a. That the sights are blackened.

b. That the gun sling is properly adjusted, is tight enough to give support, and is high up on the arm.

c. That the proper position is taken.

d. That the slack is taken up promptly.

e. That the aim is correct.

f. That the breath is held while aiming. As soon as the aim becomes unsteady the exercises cease and after a short rest are repeated. The coach checks the pupil's aim occasionally by means of the aiming device, and the pupil's manner of holding his breath by watching his back. The trigger is not squeezed in the position exercises.

222. *Assuming prone position rapidly* (see Pl. 14).—*a.* The movement is described by the numbers for the purpose of instruction in the sequence of movement. After this sequence is learned the position will be taken as one motion. With practice, men can take the prone position and be aiming at the target in 3 seconds.

(1) Being at the *ready*, sling adjusted, throw the right foot well back and bend left knee as low as possible, placing the butt of the rifle on the ground 4 or 5 inches to the left, and slightly in front, of the spot where the right elbow is to rest. The grip on the rifle is retained with both hands.

(2) Place the right elbow on the ground.

(3) Place the left leg back near the right one, feet apart, and slide well back while lying on the belly.

(4) Take the butt of the rifle off the ground and place it against the right shoulder.

(5) Lower the left elbow to the ground.

b. These movements will bring the firer into his normal position, with the rifle pointing at the target. Care should be taken to place the butt of the rifle on the ground without jar and to place the elbows on the ground in the same manner. With practice this position can be assumed very rapidly and without shock.

c. When the details of this movement have been learned it should be practiced as one movement. When properly done the feet will still be sliding back into position when the rifle is being placed on the shoulder, and the left elbow will come to the ground at almost the same time that the backward movement of the body is completed.

d. The ability to assume this position rapidly is a distinct advantage in war because a man can thus fire an aimed shot more quickly than if he remained standing. The position also reduces the enemy's target from a standing to a prone figure. Instruction in taking positions rapidly will be given during the period of preparatory training.

223. *Assuming sitting position rapidly.*—*a.* To assume the sitting position rapidly, break the fall by placing the right hand on the ground slightly to the right rear of the spot on which to sit.

b. In practicing for range firing, first sit down and aim at the target in the normal sitting position. Then mark the position of the heels and the spot on which to sit. Then at the command, *Ready on the firing line*, stand with the heels in the



PLATE 14.—Assuming the prone position



Fig. D



Fig. E



Fig. F

PLATE 14. (Continued)

places made for them. As the target appears sit down on the spot marked, breaking the fall with the right hand, regrasp the small of the stock with the right hand and assume the aiming position.

c. Other methods of assuming the sitting position may be used.

Section IV

THIRD STEP—TRIGGER SQUEEZE

224. *Importance.—a.* The most important item in rifle shooting is to squeeze the trigger in such a way as to fire the rifle without affecting the aim. The trigger must be squeezed so steadily that the firer can not know the instant the piece will be fired. Any man can hold the rifle steady enough to fire a good shot, and he can so hold it for a comparatively long time. Misses and poor shots are due to spoiling the aim just before the discharge takes place. This is done by jerking the trigger and flinching. If a man squeezes the trigger so steadily that he can not know when the discharge will take place, he does not spoil his aim and he will not flinch, because he does not know when to flinch.

b. No good shot attempts to set the rifle off at any instant at which his sights are aligned on the mark. That is what the poor shot does. The good shot holds his aim as accurately aligned on the mark as possible and maintains a steady pressure upon the trigger until the piece is fired. This method of squeezing the trigger must be carried out in all preparatory practice or the whole value of the practice is lost.

c. There is only one correct method of squeezing the trigger—a steady increase of pressure so that the firer does not know when the discharge will take place.

d. Excellent shots are men who through training have learned to increase the pressure only when the sights are in absolute alignment with the bull's-eye. When the sights get slightly out of alignment, they hold what they have with the finger and only go on with the increase of pressure when the sights again become properly aligned.

e. The difference between poor shots and good shots, good shots and very good shots, and very good shots and excellent shots, is only the difference in their ability to squeeze the trigger properly. The heart and soul, the beginning and end of good shooting, is the trigger squeeze. Any man with fair

eyesight and strength enough to be on duty can align the sights on the target and hold them there for an appreciable length of time. When he has acquired sufficient will power and self-control to forget that there is to be an explosion and a shock, and squeezes the trigger with a steady increase of pressure until the rifle is fired, he has become a good shot, and not until then. This squeeze of the trigger applies to rapid fire as well as slow fire. The increase of pressure is faster in rapid fire, but the process is the same.

225. *Calling the shot.*—The pupil must always notice where the sights are pointed at the instant the rifle is fired and call out at once where he thinks the bullet will hit. Shots are called even when only simulating fire at a mark, so as to acquire the habit and to develop a closer hold.

No man can become a good shot until he is able to call his shot before it is marked. Inability to call a shot indicates the firer did not know where the sights were pointing at the time the rifle was fired; in other words, he shut his eyes first and fired afterwards.

226. *Trigger-squeeze exercise.—a.* The third step in the preparatory training, and the most important, is the instruction in trigger squeeze.

(1) The instructor explains to the assembled squad or group the importance of correct trigger squeeze. (See par. 224.) He assures himself by questions that each pupil understands what is meant by a "steady increase of pressure"—that is, that the increase is only applied when the aim is correct and then by a steady increase and not by a sudden pressure.

(2) The instructor explains the necessity for calling the shot. (See par. 225.)

(3) The above points having been explained, the instruction becomes individual by the coach and pupil method supervised by the instructor.

b. The pupil is first taught the trigger squeeze in the prone position with the sandbag rest. In this position he can hold steadily and has not the temptation to "snap" the shot the instant the front sight touches the bull's-eye, as he has in a less steady position. After he has learned the principles of correct trigger squeeze with the sandbag rest, he is instructed in the other positions, but for the first half day at least he is not allowed to squeeze the trigger except in the prone position, first with, and then without, the sandbag rest.

c. A great deal of trigger-squeeze exercise is necessary, but it must be carefully watched and coached. Trigger-squeeze exercise that is not along the right lines is worse than none.

d. Soldiers will not be allowed to simulate fire until they have been thoroughly instructed in trigger squeeze, and then in all drills and field exercises where fire is simulated they will be cautioned to aim at definite objects and to carry out the correct principles of aiming, squeezing the trigger, and calling the shot. Careless trigger squeezing in field exercises may injure a soldier's chance of becoming a good shot.

227. *Duties of the coach in trigger-squeeze exercise.*—In the trigger-squeeze exercises the coach watches the following points:

a. That the sights are blackened.

b. That the gun sling is properly adjusted, is tight enough to give support, and is high up on the arm.

c. That the proper position is taken.

d. That the slack is taken up promptly.

e. That the aim is correct.

f. That the breath is held while aiming.

g. That the trigger is squeezed properly (only when the aim is correct and then only by a steady pressure).

h. That the pupil calls the shot. The coach occasionally checks the aim by means of the aiming device, and the breathing by watching the back of the pupil under instruction.

Section V

FOURTH STEP—RAPID FIRE

228. *General principles.*—*a.* All the points learned in slow fire are carried out in rapid fire. It is especially important that the men understand that the trigger squeeze is the same as in slow fire. Time is gained by reloading the magazine quickly and without fumbling, by working the bolt rapidly, and by keeping the eye on the target while working the bolt.

b. The importance of correct rapid-fire training can not be too strongly emphasized. This is a phase of instruction that is often neglected. Rapid fire does not mean that accuracy is sacrificed for rapidity. Through training, accurate fire becomes more and more rapid until the ability to fire from 10 to 15 accurate shots per minute is acquired, but no man will be permitted to attempt to fire more than 10 shots per minute

until he has had long training on the rifle range and has become a seasoned shot. Recruits having target practice for the first time will not be reprimanded for failing to fire the prescribed number of rounds in the stated time limit. It is advisable to extend the time 10 or 15 seconds for recruits when they first begin rapid-fire practice on the range.

c. Careful coaching is essential to prevent acquiring the habit of looking into the chamber while working the bolt. The man who looks into the chamber works the bolt slowly so as to see the cartridge run in. He loses time in finding his own target again. He often fires on the wrong target. The application in war is apparent. A soldier who takes his eye off an indistinct target to look into the chamber while working the bolt may not be able to find his target again.

d. Training for rapid fire extends throughout the year. This training is accomplished by requiring all simulation of fire during problems and maneuvers to be carried out along the proper lines.

e. Rapid-fire exercises are given under conditions conforming as nearly as possible to those of actual range practice. Full-sized targets are placed at 200, 300, and 500 yards from the men under instruction with some simple arrangement permitting the target to be exposed to view for the prescribed period of time.

A curtain of target cloth or other material may be arranged on each target frame in such a way that it can be dropped to expose the face of the target, and pulled up again to conceal it. A cord which runs over the top of the target frame may be used for this purpose.

f. When lack of time, material, or space make it absolutely necessary, the rapid-fire exercises may be held at shorter ranges and on targets proportionately reduced in size. This practice as well as all other preparatory exercises can be held indoors when weather conditions make it necessary.

229. *Bolt operation exercise.—a.* This exercise is held for the purpose of acquiring a smooth and rapid bolt operation, and the trigger is not pressed. The trigger is tied back to the trigger guard in order to cause the bolt action to be the same as it is when the trigger has been pressed. If the trigger is not thus tied the piece will remain cocked when the bolt is shoved home, and the amount of force necessary to raise the bolt again will be less than when actually firing or simulating fire.

b. Practice in bolt operation exercise will be held in all positions and no pupil will be considered proficient until he can

operate the bolt at least 20 times in 20 seconds while in the prone position. The first hour of rapid-fire training will be devoted to bolt operation exercises. Thereafter each pupil will be given additional practice from time to time until he is considered proficient.

c. The bolt operation exercise is conducted as follows:

(1) The instructor places his squad or group in line, has each man tie the trigger to the back of the trigger guard and explains why this is done.

(2) The instructor explains and demonstrates that the bolt is jerked fully back and slammed home with practically one motion, instead of by four distinct motions as men are inclined to do at first.

(3) The instructor demonstrates the bolt operation exercise emphasizing the duties of the coach as outlined in paragraph 32.

(4) The above points having been explained, the instructor places his squad or group in line, arranged in pairs to act as coach and pupil, requires the pupils to assume a firing position and personally gives the commands for starting and stopping the exercise. Frequent changes of coach and pupil are necessary to prevent undue fatigue.

230. *Duties of the coach in bolt operation exercise.*—In the bolt operation exercise the coach watches the following points:

a. That the bolt is operated properly and rapidly.

b. That the eye is kept on the target.

c. That the right hand is brought to the small of the stock, the rifle to a horizontal position, and the cheek placed against the stock each time the bolt is closed.

d. That the butt of the rifle is kept against the shoulder.

e. That the elbows are kept on the ground if in the prone position, or between the legs if in the sitting position.

f. That no attempt is made to aim or press the trigger.

231. *Rapid-fire exercise.*—*a.* The instructor assembles his squad or group and explains and demonstrates—

(1) The correct method of loading a clip of ammunition into the magazine, using dummy cartridges for the demonstration. He explains that the ball of the right thumb is placed on the powder space of the upper cartridge very close to the clip, with the fingers under the rifle against the floor plate, the cartridges being shoved into the magazine with a firm steady push. The empty clip is removed by the right hand.

(2) The working of the bolt while in the prone position, keeping both elbows on the ground and allowing the muzzle to drop

down and to the right. The working of the bolt in the sitting position keeping both elbows between the legs and allowing the muzzle to drop down and to the right.

(3) The disadvantage of looking into the chamber while working the bolt and of looking into the magazine to see if there are any more cartridges left.

(4) That the follower holds the bolt back when the magazine is empty and that the eye is never taken from the target until the follower holds the bolt, except when a man has counted the shots fired and knows that his magazine is empty.

(5) That the butt of the rifle is never taken from the shoulder when working the bolt.

(6) That a quiet, confident movement of the hand in taking the clip from the belt and placing it in the clip slot is really more rapid than a hurried movement and avoids the chance of fumbling which usually accompanies hurried movements.

b. The above points having been explained and demonstrated, the instructor places his squad or group in line and arranges them in pairs so that they may act as coach and pupil. The commands and procedure are exactly the same as in actual rapid fire on the rifle range, except that practice dummy ammunition is used. Rapid-fire targets set at 200, 300, and 500 yards from the line of pupils are exposed to view for the proper interval of time, upon signals from the instructor in charge of the line. Sights are set at the actual range being used. (See par. 228 *e*.)

c. Practice dummy ammunition only will be used in this exercise. The use of range dummy ammunition except on the firing line is prohibited.

232. *Duties of the coach in rapid-fire exercise.*—*a.* In a rapid-fire exercise the coach watches the following points:

(1) That the sights are blackened.

(2) That the gun sling is properly adjusted.

(3) That the correct position is taken.

(4) That the slack is taken up promptly.

(5) That the breath is held while aiming.

(6) That the trigger is squeezed properly.

(7) That the bolt is worked rapidly and that the eye is kept on the target, the elbows kept in place, and the butt of the rifle kept to the shoulder while working the bolt.

(8) That the magazine is reloaded quickly and without fumbling.

b. The coach must be alert and correct all errors.

Section VI

EFFECT OF WIND—SIGHT CHANGES—USE OF THE SCORE BOOK

233. *Wind.—a.* With the exception of wind, weather conditions have practically no effect on the bullet up to 600 yards. Beyond 600 yards the effect is slight, but it is well for the expert shot to understand the influences of the different atmospheric conditions and the corrections to be applied. In firing at 600 yards or under, the effect of the weather conditions (except that of the wind) on the bullet can be disregarded. The influence of wind must be carefully studied.

b. The horizontal clock system is used in describing the direction of the wind. The firing point is considered the center of the clock and the target is at 12 o'clock. A 3 o'clock wind comes directly from the right. A 6 o'clock wind comes straight from the rear. A 9 o'clock wind comes directly from the left. A wind that is constantly changing its direction back and forth is called a "fishtail wind."

c. The force of the wind is described in miles per hour. The force of the wind is estimated by throwing up light dry grass, dust, or light paper and watching how fast it travels, by observing the danger flags, and by the mirage. In general a light breeze is a 5 to 8 mile wind; a fairly strong breeze is a 10 to 12 mile wind. Wind blowing 20 miles an hour is very strong.

d. Wind from either side blows the bullet out of its path. This must be allowed for by moving the rear sight toward the wind by means of the wind gauge. The worst kind of a wind in which to shoot is a fishtail wind at 12 or 6 o'clock. The amount the bullet will be blown from its path depends on the force and direction of the wind and on the distance to the target.

e. The amount of windage to allow for the first shot is shown in the "wind-gauge diagram" in the score book. It can be found approximately by applying the "wind rule."

f. After the first shot is marked, the correction necessary in windage is found by referring to the ruled targets in the score book showing the windage correction for each range. Windage corrections can be also estimated by applying the wind-gauge rule given in paragraph 235.

234. *Wind rule.—a.* The range (expressed in hundreds of yards), multiplied by the velocity of the wind and divided by 10, equals the number of quarter points to allow for a 3 o'clock or 9 o'clock wind.

Example: At 500 yards the wind is blowing 8 miles per hour at 3 o'clock, $\frac{5\times 8}{10}=4$ quarter points or 1 point of windage. The sight should have one point of right windage for the first shot.

b. As the direction of the wind gets nearer and nearer to 12 or 6 o'clock the amount of windage necessary becomes less and less. Winds one hour away from 3 and 9 o'clock require only slightly less windage. Winds one hour away from 12 and 6 o'clock require almost half as much windage as 3 or 9 o'clock winds.

c. Winds that are at 12 o'clock require no windage, but it is a very rare thing to have a steady wind from either 12 or 6 o'clock. Strong winds from 12 o'clock tend to retard the bullet a little, and from 6 o'clock tend to accelerate the bullet, but the amount is so slight that a correction in elevation is very seldom necessary. At the most this allowance is very small.

235. *Wind-gauge rule.*—*a.* One point of windage moves the point of impact of the bullet 4 inches for each 100 yards of range. Thus one point of windage will move the hits 8 inches at 200 yards, 12 inches at 300 yards, and 20 inches at 500 yards. This rule is not exact, but near enough for all practical purposes.

b. The point of impact of the bullet will move in the same direction as the rear sight is moved. For example, if it is desired to move the hits to the left, the rear sight must be moved to the left; if it is desired to make the hits strike lower and to the right, the rear sight must be moved down and to the right.

236. *Mirage.*—*a.* Heat waves that can be seen near the ground are called "mirage." The direction in which these waves are blowing and their speed are watched by good riflemen in judging the direction and velocity of the wind. The mirage is of assistance in judging the wind principally on bright days when there is a light, variable breeze.

b. In a moderate wind the waves seem to race across the range and to lie close to the ground. In a light wind the waves do not lie so close to the ground and appear to move more slowly. In strong winds the mirage can not be seen.

c. When there is no wind or when the wind is at 12 or 6 o'clock the mirage seems to boil. The "boiling" of the mirage signifies that the wind is changing direction. The firer should wait until the mirage begins a steady flow from one side or the other before firing.

d. Mirage can be seen much better with a field glass or telescope than with the eye alone.

237. *Elevation rule.—a.* Changing the elevation 100 yards at any range will give a change on the target, in inches, equal to the square of the range (expressed in hundreds of yards).

Example: At 200 yards, changing the elevation 100 yards makes 4 inches change on the target; at 300 yards, 9 inches; at 500 yards, 25 inches; at 600 yards, 36 inches. This rule is not exact, but near enough for all practical purposes.

b. The horizontal lines in the model targets in the score book also show how much change to make in the elevation at each range. When a change in elevation is necessary it is best to consult the model target in the score book before deciding how much of a change to make.

238. *Light. -a.* Light has no effect on the bullet, but does affect the aim. The effect of changes of light is very slight with most riflemen. The correction for variations in light does not exceed 25 yards in elevation at any range. The effect of changes of light is not uniform in its effect upon the aim of all riflemen.

b. As a general rule men unconsciously aim a little lower in a poor light than in good light and consequently need more elevation when the light is poor. This lowering of the aim is due to the fact that the outline of the bull's-eye is not distinct in a poor light; therefore men can not hold as close to the bull's-eye and still be sure of their aim. As a rule poor light exists on dark days when there is a haze in the air; on very bright, warm days when there is a decided mirage; and when the sun is back of the target. The best light for shooting is when the sky is uniformly overcast and there is sufficient light to see the target clearly.

c. Sunlight from one side has the same effect, with most men, as wind from that side. This is because the side of the front sight toward the sun is more clearly defined and unconsciously held under the center of the bull's-eye. Such holding places the bullet on the opposite side of the bull's-eye from the sun. The allowance of windage for sunlight varies from zero to almost one-half a point. In making this allowance the sight is moved toward the sun.

239. *Zero of a rifle.—a.* The zero of a rifle for each range is the point at which the rear sight must be placed, for both elevation and windage, in order to hit the center of the bull's-eye on a normal day when there is no wind. This zero may not conform to the marks on the sight leaf and the wind gauge. The

zero of any one rifle may differ with different men owing to the difference in their way of holding the rifle, or of aiming.

b. Each man must determine the zero of his own rifle for each range. He does this by studying the data which he has written in his score book concerning sight settings, sight changes, light, and the direction and velocity of the wind. The zero of a rifle is best ascertained on a day with an overcast sky when there is no wind. Having learned the zero of his rifle, the rifleman computes all his windage and elevation allowances for the first shot from this zero and not from the zero marked on the rifle sight, unless the two correspond.

240. *Canting the rifle.*—If the rifle is canted, the bullet will not hit exactly where the rifle is aimed. Even unskilled shots, however, cant the rifle but very slightly, and the effect on the strike of the bullet is correspondingly slight. This mistake of ascribing a wide 4 or a 3 to a slight cant of the rifle should not be made.

241. *Shooting up or down hill.*—In shooting either up or down hill less elevation is needed than when shooting on the level. The steeper the hill the less elevation is needed, so that when firing vertically up or down no elevation at all is needed, no matter how distant the target. Slight slopes that may be found on target ranges have no appreciable effect upon the elevation used.

242. *Sight-setting and sight-changing exercises.*—In these exercises the instructor uses the full-sized A, B, and D targets, with spotters to indicate the position of the hits.

a. The instructor assembles his squad or group, each pupil having his rifle, score book, and pencil, and conducts the exercise as follows:

(1) Points out the wind gauge and explains that each line or division represents one point of windage.

(2) Points out the graduations on the sight leaf and explains that the line directly under the number represents the range.

(3) Explains the effect of wind and cautions the class to disregard all atmospheric influences except wind.

(4) Explains the wind-gauge diagram in the score book.

(5) Reads over and explains the wind rule, wind-gauge rule, and the elevation rule. By asking questions he assures himself that these rules are understood.

(6) Explains the horizontal and vertical lines on the "model targets" in the score book and assures himself that each man understands the use of this diagram.

(7) Shows the pupils how to draw the elevation and windage lines, for each range, on the blank targets of the score book upon which they are to plot their shots during range firing.

(8) The above points having been explained to the assembled group, the pupils are placed in pairs. The instructor tests the ability of the members of the class to set the sights for the first shot by use of the wind rule or the wind-gauge diagram. Every time the sights are set, each pupil examines the sight of the pupil paired with him and tells the instructor when called on the sight setting used.

(9) Instructor tests ability to change sights intelligently after first shot by referring to the horizontal and vertical lines on the model target.

b. Examples:

(1) "You are at 500 yards and estimate the wind to be 10 miles at 3 o'clock; set your sights for the first shot. Jones, what does Smith's sight read? Robinson, what should the sight read? Each man whose team mate did not set his sight at 1¼ points right windage, hold up his hand." The instructor, by questions and explanations, assists the men who have made mistakes.

(2) "You are at 600 yards and estimate the wind to be 10 miles at 9 o'clock. Set your sights for the first shot. Suppose you fired and the spotter marked the hit here (placing a spotter in the 4 space near the bull's-eye, at 3 o'clock) and you were sure your hold and trigger squeeze were good; change your sights to bring the next shot into the center of the bull's-eye. Johnson, what does Williams's sight read? Snider, what should the sight read? Each man whose team mate did not have his sight set at 2 points left windage, hold up his hand."

c. The instructor assists those men who have made decided errors. Differences of less than one-fourth point are matters of opinion in applying the rules and are unimportant.

d. The instructor gives a number of examples with the wind at different angles and velocities and at the various ranges until the class thoroughly understands the use of the wind gauge.

e. Following the instruction in the use of the wind gauge, the instructor puts the class through similar exercises which require changes in elevation.

f. The instructor gives a number of examples which require changes in both windage and elevation, until the principles of sight changing are well understood by the class.

g. Assume the zero of the rifles to be away from the normal both as to windage and elevation and repeat the exercises.

h. Examples of other sight-setting exercises.

(1) "Set your sight at 625 yards with 1½ points of left windage. Suppose you fire four shots hitting here (place four spotters in the bull's-eye), and your fifth shot goes here (place spotter on 3 space at 11 o'clock). Jones, what are you going to do now? Jenkins, what are you going to do? You should not do anything to the sight. It is practically certain that you squeezed the trigger improperly and flinched. Not even a very sudden and violent change in the weather or light could cause nearly that much of a difference. Don't try to correct your own faults by changing the sights around."

(2) "For your first score in rapid fire at 200 yards you have set your sight at the same elevation and windage that you used in slow fire. Suppose this to be 200 yards elevation and zero windage and your group goes here (putting 10 spotters low and to the left). Set your sight to bring the next score into the figure. Miller, what does Wright's sight read?"

i. A group in rapid fire should strike the same place as in slow fire. Rapid-fire groups that vary in position from slow-fire groups are due to imperfect trigger squeeze in rapid fire, and consequently these groups are more scattered. Men should endeavor to so squeeze the trigger that the rapid-fire sight settings will be the same. But if there is a constant variation in the two sight settings, each man should note it in his score book and set his sight in rapid fire so as to make the groups count as much as possible. Groups that are scattered all over the target can not be corrected by changing the sight.

243. *Use of the score book.—a.* Each man must keep a score book in which he records not only the value of the hits but the location of each hit, the sight setting and sight changes, the force and direction of the wind, the kind of light, the hour, the date, and such other data as may be of use in the future. Spaces for these notes are provided on the score sheets of the score book.

b. The use of the score book on the range is important for the following reasons:

(1) The plotting of the shots shows the firer the location of his group.

(2) The wind-gauge diagram indicates the windage to take for the first shot. The model target shows by means of vertical and horizontal lines the change in elevation and windage necessary to place the group in the center of the target.

(3) Plotting the shots and recording the data as to light and wind help the soldier to learn the zero of his rifle.

(4) The data written down as to sight settings and weather conditions while firing at any range are of great assistance in setting the sight correctly when again firing at that range. Where a number of scores have been fired and recorded, the firer should get his sight settings from previous scores fired on days that were similar as to light and wind.

c. The score book will be kept personally by the man firing. The coach assists him when necessary to decide what to write down, but the coach will neither plot the shots nor enter any data.

244. *Score-book exercises.—a.* The squad or larger group is assembled in front of a full-sized B target, each man with score book, pencil, and rifle. The class is divided into pairs. Each man acts as coach for the other man of his pair.

The instructor states the light and weather conditions and the range. He then indicates 10 successive shots on the target by means of a spotter and requires each man to plot each shot as it is indicated, write down the data given from time to time, and make the actual sight settings and corrections on his rifle. Weather and light conditions assumed by the instructor and changes announced during the exercise should be such as are likely to occur on the rifle range.

b. The pupils are told by the instructor to open their score books at the first blank page and plot the shots and write in the data as given to them. They are further instructed to write lightly so that erasures may be made allowing the same page to be reused. The example as given will be substantially as follows:

(1) "You are at 600 yards on the rifle range. You are getting ready to fire a slow-fire score. There is bright sunlight. The wind varies from 8 to 12 miles an hour in velocity and from 1 to 3 o'clock in direction. When you are in position ready to fire the first shot, the wind seems steady at 3 o'clock and blowing about 8 miles an hour. Write in your data and set your sights. Jones, where has Robinson set his sight? Williams, where has Smith set his sight? You should have a scant point and a quarter of right windage.

(2) "You fire your first shot and the spotter marks it here (put spotter a close 4 at 7 o'clock). Decide what you are going to do and set your sights. Dodd, what does McLean's sight read? You should have moved your sight about one-fourth a point to the right and raised it 25 yards, so that your sight should read 625 yards and a scant 1½ or a strong 1¼ of right windage.

(3) "Your second shot goes here (spotter near center of bull's-eye) ; your third shot goes here (spotter in bull's-eye near the top) ; your fourth shot goes here (spotter in bull's-eye near the bottom) ; your fifth shot goes here (close 4 at 9 o'clock). The wind seems to be a little stronger, but you are not sure. You think your hold was all right, but you are not absolutely certain. Johnson, what are you going to do?" "I would take half the correction called for by the model target." "Set your sight accordingly. You should have about 1¾ points of right windage now. Your sixth shot goes here (a bull's-eye near the edge at 3 o'clock). Malone, what are you going to do? The four on the fifth shot must have been due to an error in aim or trigger squeeze, so put your sight back to where it was before (1½ points).

(4) "Before you fire your seventh shot you notice that the wind has shifted to about 1 o'clock, but still blowing the same rate. Wilson, where has Simpson set his sight now? Billings, what does the book say about a 1 o'clock wind? You need almost half as much windage as for a 3 o'clock wind. You should now have almost three-fourths point of right windage. Set your sight there.

(5) "Your next shot goes here (a wide 4 at 6 o'clock). Collins, what correction has Brown made for his eighth shot? You should have made no change in your sight. Your windage is apparently correct and there has been no change in the conditions. Your low shot was due to a poor aim or a poor trigger squeeze. Don't try to correct your personal errors by moving your sight around. Your eighth shot goes here (bull's-eye) ; your ninth shot here (bull's-eye) ; your tenth shot goes here (bull's-eye). Write in your notes and exchange books with your team mate. Smith, has Williams plotted all the shots correctly? Read the notes he has written in his book."

c. The instructor corrects errors and mistaken ideas and makes a note of the pupils needing additional instruction.

Section VII

FIFTH STEP—EXAMINATION OF MEN BEFORE STARTING RANGE PRACTICE

245. *Examination.*

(Note.—The answers given herein are merely examples. Men should be required to explain them in their own words.)

Q. What is this [drawing a circle on the ground or on paper]?—A. A circle.

Q. Where is the center of it?—A. (Pointing to the center.)

Q. Suppose that circle represents a peep sight through which you are looking and that you are told to bring the top of the front sight to the center of it; where would the top of the front sight be?—A. Here [pointing to the center of the circle].

Q. Make a mark in the circle to represent the front sight. Make a small circle to represent the bull's-eye. In the bull's-eye in the center of the peep sight?—A. No; the bottom edge of it is in the center.

Q. Why?—A. Because the top of the front sight is in the center and just touches the bottom edges of the bull's-eye.

Q. Should the front sight be held up into the bottom of the bull's-eye?—A. No; it just touches the bottom edge of the bull's-eye, so that all of the bull's-eye can still be clearly seen.

Q. What is this [indicating sighting bar]?—A. Sighting bar.

Q. What is it for?—A. To teach me how to aim.

Q. Why is it better than a rifle for this purpose?—A. Because the sights on it are much larger and slight errors can be more easily seen and pointed out.

Q. What does this represent?—A. The front sight.

Q. And this?—A. The rear sight.

Q. What is this?—A. The eyepiece.

Q. What is the eyepiece for?—A. To cause me to place my eye in such a position as to see the sights in the same alignment as that set by the coach.

Q. Is there an eyepiece on the rifle?—A. No; I learn by the sighting bar how the sights look when properly aligned and I must hold my head so as to see the sights the same way when aiming a rifle.

Q. How do you hold your head steadily in this position when aiming a rifle?—A. By pressing my cheek firmly against the side of the stock.

Q. Where do you focus your eye when aiming a rifle?—A. On the bull's-eye.

Q. Tell me what is wrong with these sights. (The instructor now adjusts the sights of the bar making various slight errors; first, to show the correct and incorrect adjustments of the sights, and then, with the sights properly adjusted, he sights on the small bull's-eye to demonstrate correct and incorrect adjustments, requiring the man to point out any errors.)

Q. What is the difference between the way you aim with peep sight and the way you aim with an open sight?—A. There is no difference. In both, the top of the front sight is brought

to the center of the circle. With the open sight the top half of the circle is omitted, making it look as if the top half of the circle had been cut off and removed.

Q. Now, take this sighting bar and adjust the sights properly. (Verified by the instructor.)

Q. Now that the sights are properly adjusted have the small bull's-eye moved until the sights are properly aimed at it.

Q. How do you breathe while aiming?—A. After I get my sights lined up on the bull's-eye, I draw in an ordinary breath and hold it while aiming and squeezing the trigger.

Q. Take the prone position and aim and snap at that mark. (The instructor must assure himself that the man knows how to hold his breath properly while aiming. Many men have great difficulty in learning to do this correctly.)

Q. What is this?—A. An aiming device.

Q. What is it used for?—A. To show the instructor how a man is aiming.

Q. Now, I will take this rifle, and with the aid of the sandbag rest to hold the rifle steady I will aim at the bull's-eye, and you will watch the sights through the aiming device and tell me when my aim is right and when it is wrong, and what the error is when wrong. (The instructor now aims so as to illustrate the common faults and the man must observe and call attention to them.)

Q. I will now snap at a bull's-eye a few times and you will watch through the sighting device and call where the shots would have hit.

Q. Now, take this rifle and, using the sandbag rest, aim at the bull's-eye, and I will watch you through the aiming device. (The instructor satisfies himself that the man understands sighting and aiming, and requires him to snap a few times and to call his shots.)

Q. I will take the rifle and assume the kneeling, sitting, and prone positions, and position with sandbag rest, and you will tell me whether the position is correct or incorrect in each case. (The gun sling is adjusted in all these tests.)

Q. Take this rifle and show me your kneeling, sitting, and prone positions, and position with sandbag rest.

Q. Now show me how you take the sitting and prone positions rapidly from a standing position.

Q. How do you squeeze the trigger?—A. I squeeze the trigger with such a steady increase of pressure as not to know just when the rifle will go off.

Q. What do you *know* while you are squeezing the trigger?—A. I know that the sights are lined upon the bull's-eye.

Q. If the sights are slightly out of alignment, what do you do?—A. I hold the pressure I have on the trigger and only resume the increase of pressure when the sights become lined upon the bull's-eye again.

Q. If you do this, can your shot be a bad one?—A. No.

Q. Why?—A. Because I can not flinch, for I do not know when to flinch, and the sights will always be lined up with the bull's-eye when the rifle goes off, because I never increase the pressure on the trigger, except when they are properly lined up.

Q. Is it necessary to take a long time to press the trigger in this way?—A. No. The method of squeezing the trigger is slow at first but rapidity is developed by practice.

Q. How do you squeeze the trigger in rapid fire?—A. I squeeze it the same way as in slow fire, with such a steady increase of pressure as not to know when the rifle will fire.

Q. In rapid fire how do you gain time so as not to be compelled to hurry in aiming and squeezing the trigger?—A. I gain time by taking the position rapidly, working the bolt rapidly, and by keeping my eye on the target while working the bolt.

Q. How does keeping your eye on the target help you to gain time?—A. A man who looks into the chamber while working the bolt always works it slowly so as to see the cartridges enter the barrel and he loses time in finding his own target again.

Q. What other fault, in rapid fire, comes from looking into the chamber while working the bolt?—A. Firing on the wrong target.

Q. Show me how you work the bolt in rapid fire, prone, sitting, and kneeling.

Q. Now show me how you load a clip of service ammunition into the magazine.

Q. Is it important to get into the correct position before beginning to shoot in rapid fire?—A. Yes; even though it takes more time, I should always get into the correct position before beginning to shoot.

Q. What is meant by "calling the shot"?—A. To say where you think the bullet hit as soon as you shoot and before the shot is marked.

Q. How can you do this?—A. By noticing exactly where the sights point when the rifle goes off.

Q. If a man can not call his shot properly, what does it usually indicate?—A. That he did not squeeze the trigger properly and did not know where the sights pointed at the time the rifle went off.

Q. What is this?—A. A score book.

Q. What are these lines for [indicating the horizontal lines in the model target]?—A. To show the amount of elevation necessary to bring the shot to the middle line.

Q. What are these lines for [indicating the vertical lines on the model target]?—A. To show the amount of change in windage necessary to bring the shot to the middle line.

Q. If a shot hits here [indicating], what change in your sight would you make to bring the next shot to the center of the bulls-eye?

Q. What effect does moving your rear sight have on the shot?—A. It moves it in the same direction as the rear sight moves.

Q. If you want to make the shot hit higher, what do you do?—A. I raise my rear sight.

Q. If you want to make your shots hit more to the right, what do you do?—A. I move my rear sight to the right.

Q. If you move your rear sight one point of windage, how much will it move the point struck by the bullet?—A. Four inches for each 100 yards of range.

Q. Explain what you mean by that.

Q. I will place this spotter on this target (full size 500-yard target) to represent a shot properly fired by you at 500 yards with zero windage and sight set at 500 yards. Take your rifle and move your sight to bring the next shot to the center of the bull's-eye. (Instructor now tests in various ways the man's ability to make proper sight corrections.)

Q. What are the three principal uses of the score book?—A. To show me where my shot group is located, to indicate how much change in the sight is necessary to move a shot or group of shots to the center of the target, and to make a record of the sight settings of my rifle for the different ranges under various weather conditions so that I will know where to set my sight when starting to shoot at each range under different weather conditions.

Q. Tell me what effect different light and weather conditions have on a man's shooting.

Q. In firing at ranges up to and including 600 yards, what is the only weather condition for which you make sight corrections?—A. Wind.

Q. What three things do you do in cleaning a rifle after it has been fired?—A. I first remove the powder fouling from the bore. I then dry the bore thoroughly of the liquid used in removing the fouling. After this is done I grease the bore to protect it from rust.

Q. How do you remove the powder fouling from the bore?—A. By swabbing it thoroughly two or more times with cleaning patches saturated with water.

Q. How do you dry the bore?—A. By running clean patches through the bore until it is thoroughly dry.

Q. How do you protect the bore from rust?—A. By swabbing it thoroughly with a cleaning patch saturated with grease.

246. *Blank forms to show the state of instruction.*

Name	Sighting bar	Sighting and aiming with rifle	Triangle exercises	Blackening sights	Use of gun sling	Taking up the slack	Holding the breath	Positions	Assuming positions rapidly	Care and cleaning of the rifle	Trigger squeeze	Calling the shot	Bolt operation	Rapid fire	Sight changes	Effect of light and wind	Use of score book	Use of coach	Final examination	Gallery practice	Pads

METHOD OF MARKING

Fair: 

Good: 

Very good: 

Excellent: 

Excellent and has instructional ability: 

Section VIII

GALLERY PRACTICE

247. *Object.*—Gallery practice represents the application with gallery ammunition of the principles taught in the preparatory exercises. When the rifle range is conveniently situated and the ammunition allowance is plentiful, gallery practice may be omitted. However, gallery practice may be carried on within the post or camp at times when the range is not available. By giving the individual an object lesson of his progress, gallery practice provides a means for sustaining interest in preparatory instruction before going on the range. Gallery practice enables the company commander to visualize the state of training of his command and to concentrate his efforts on the training of those who are most deficient. Every National Guard unit armed with the rifle should have a gallery range, and a resourceful company commander will be able to improvise one where he is unable to secure funds for a first-class one.

248. *Value.*—The chief value of gallery practice lies in the fact that it is convenient, interest sustaining, and economical. It does not have the value of range practice because of the absence of recoil, but on account of its convenience and the saving in the cost of ammunition, the organization commander will sometimes find that gallery practice is a valuable step between preparatory instruction and range practice.

249. *Gallery course.*—No gallery course is prescribed. At the discretion of the organization commander it may include firing from all positions and all classes of fire, using targets appropriate to the ranges and classes of fire. Gallery practice may be with the service rifle using reduced-load ammunition or with small-bore rifles and ammunition.

250. *Continuous gallery practice.*—Gallery practice may be carried on throughout the year, subject to such limitation as may be imposed by the allowance of ammunition. Organized gallery practice preceding range practice will be conducted in accordance with methods of instruction as prescribed in these Training Regulations. Continuous gallery practice will be properly supervised and controlled. All persons who have never been properly instructed in shooting methods prescribed herein will be given a course of preparatory instruction before being permitted to fire on the gallery range, and will be coached during the firing of their first 100 rounds.

Section X

RANGE PRACTICE

251. *General principles.*—Range practice is divided into two parts:

a. Instruction practice which represents the application with service ammunition of the principles taught in the preparatory exercises. During instruction practice the soldier works under the supervision of a coach. The coaching methods prescribed in this section apply to instruction practice only.

b. Record practice in which the soldier fires for qualification as a test of his ability as a rifleman. Coaching is prohibited during the firing of record practice.

252. *Importance of correct trigger squeeze.*—*a.* Any man who is physically fit to be a soldier and who has had a proper course of preparatory instruction can aim and hold well enough to make a score of over 40. Scores that are under 40 are nearly always due to pressing the trigger incorrectly. The coach therefore will concentrate his attention on the trigger squeeze. He, of course, checks the position, the aiming, and the holding of the breath from time to time to see that the instruction on these points has not been forgotten, but by far the greatest amount of the coach's time will be devoted to requiring the pupil who is firing to press the trigger so steadily as not to know exactly when the discharge will take place.

b. It can always be proven to the pupil that he will be a good shot as soon as he learns to press the trigger properly, by having the coach press the trigger while the man under instruction holds and aims the rifle, as described in paragraph 260. Shots fired in this way from either the sandbag rest position or the prone position are almost always well placed. This is a very valuable method of coaching poor shots and is often a means of improving the scores of men who are classed as good shots.

253. *Order of firing.*—The instruction practice firing should begin as prescribed in the table outlining each course. These tables are made to fit the usual case, but organization commanders are not required to adhere rigidly to them when special circumstances make it advisable to modify the procedure in order to take the best advantage of the time and ammunition and the range facilities available. The general plan of beginning with slow fire in the sandbag rest posi-

tion and following with slow fire in the prone position without the sandbag will be adhered to.

254. *Use of sandbag rest.*—The sandbag rest is used at the beginning of the course, not to teach steadiness of hold but to facilitate instruction in the proper method of pressing the trigger. The sandbag assures such a steady hold that the temptation to the beginner to snap in his shot at the instant the sight touches or drifts past the bull's-eye, which is the cause of nearly all poor shooting, is eliminated. With the sandbag rest the sights can be held fixed at the bottom edge of the bull's-eye while the firer squeezes the trigger with such a steady pressure as not to know exactly when the rifle will go off, which is the basis of all good shooting. The habit of correct trigger squeeze, having been acquired by firing with a sandbag rest, will in all probability be retained while firing prone and in the more unsteady positions—sitting, kneeling, and standing.

255. *Pads.*—Men will be required to wear pads on the shoulder and, if the ground is hard, on the elbows for the first three or four days at least. A pad can easily be improvised by putting a pair of woolen socks under the coat or shirt so as to protect the shoulder and the upper muscles of the arm. After a few days of firing, the muscles become hardened so that the pads are not essential, but it is advisable to wear them throughout the entire period of range practice.

256. *Coaching.*—*a.* During instruction practice each man on the firing line will have a coach to watch him and to help him correct errors. This statement does not mean that each man must have an old or experienced shot beside him. Any man of good intelligence who has been properly instructed in the preparatory work and who has been given instruction in coaching methods can be used with good results, and should be used when more experienced coaches are not available.

b. It is good practice to have expert coaches in charge of one or more targets, usually on a flank, to which particularly difficult pupils are sent for special coaching.

c. Great patience should be exercised by the coach so as not to excite or confuse the firer. Everything should be done to encourage him. It is often a good plan to change coaches. It is necessary to do so when the coach shows signs of reaching the limit of his patience.

257. *Position of coach.*—The coach will take the same position as the man who is firing—prone, sitting, kneeling, or standing—so as to be able to watch his trigger finger and his eye.

258. *Watching the eye.*—Errors in trigger squeeze, which are the most serious and the hardest to correct, can be detected by watching the pupil's eye. If his eye can be seen to close as the rifle goes off, it is because he knew when it was going off and consequently was not squeezing the trigger properly. The explosion and the shock will cause a man to wink, but this wink can not be seen, due to the sudden movement of the head that takes place at the same time. If the firer can be seen to wink, it is because he winked first and jerked the trigger afterwards.



PLATE 15.—Position of coach

259. *Use of dummy cartridges in slow fire.*—If the pupil is seen to be flinching or if he is doing poor or mediocre shooting, the coach first checks his aim by the aiming device. Having assured himself that the pupil is aiming correctly, the coach has him turn his head aside while he, the coach, puts in a cartridge and shoves the bolt home. Occasionally the coach loads in a dummy cartridge instead of a live one without letting the pupil know what he has done. Then the flinch, indicated by the shoulder being shoved forward at the same time that the trigger is pressed, will be evident even to the firer himself. The coach then proves

to him, by squeezing the trigger a few times, as explained in the next paragraph, that his poor shooting is due to faulty trigger squeeze.

260. *Coach squeezing the trigger.—a.* To squeeze the trigger for the firer, the coach lies with his right elbow on the ground to steady his hand and places his thumb against the trigger and his first finger against the back of the trigger guard. In this way he can apply pressure to the trigger by a pinching action of his thumb and first finger.



PLATE 16.—Coach squeezing trigger

b. The coach then watches the firer's back, and between 5 and 10 seconds after the firer begins to hold his breath he applies enough pressure to discharge the piece. Shots fired in this way are almost always accurately placed. After discharging the piece a few times, the coach lets the firer try a few shots alone to see if he can press the trigger the same way the coach pressed it, so as not to know just when the rifle will go off. Sometimes it is necessary to repeat this exercise, but the majority of beginners can be perma-

nently cured of the tendency to flinch by a few minutes of this kind of coaching. Old shots who are flinchers require more time and patience.

261. *Duties of the coach in slow fire.*—*a.* The coach observes the pupil carefully and corrects all errors. He pays particular attention to the following points:

(1) That the sights are blackened and that they are set at the correct range.

(2) That the ammunition is free from dirt.

(3) That the pupil has the correct position, gun sling properly adjusted, body at the proper angle, elbows correctly placed, and the cheek pressed firmly against the stock.

(4) That the magazine is loaded from a clip in the correct manner.

(5) That the slack is taken up promptly.

(6) Whether or not the pupil flinches (by watching his eye).

(7) That the pupil calls his shot each time he fires.

(8) That the pupil keeps his score book correctly.

(9) That the pupil is holding his breath properly (by watching his back occasionally).

(10) That the aiming is correct (by watching through the aiming device occasionally).

b. When necessary, the coach applies the coaching methods described in paragraphs 259 and 250.

262. *Final precautions for slow fire.*—The following precautions should be read over each time before going to the firing point. They will be read by the instructor to the assembled pupils at the beginning of instruction and record practice.

a. Be sure both the front and rear sights of your rifle are properly blackened.

b. Take your score book to the firing point and obtain your elevation and windage from it for the first shot.

c. Fire your first shot very carefully and then, if necessary, change the sights to bring the second shot into the bull's-eye.

d. Always aim at the bottom edge of the bull's-eye for all shots.

e. Never try to make a bullet hit closer to the bull's-eye by changing the aiming point. When you wish to change the hitting place of the bullet, do so by changing your rear sight.

f. Do not change your windage until you have looked at your score book to find out how much of a change you need; then look at your wind gauge to see how much windage you have before you start to make the change.

g. Plot all of your shots in the score book. Watch the score book to see where your group is going. Try to bring the center of the group to the center of the bull's-eye by making the necessary change in your sight setting.

h. Do not change your sights unnecessarily. If you have made two or three good shots and then make a bad one, do not change your sights on account of the bad one because it is almost certain that it is your own fault.

263. *Importance of rapid-fire training.*—The true value of a soldier as a rifle shot depends upon his ability to deliver rapid fire, or more properly speaking, continuous fire, accurately. The tendency to jerk the trigger, and consequently to flinch, is very strong in rapid fire. This tendency must be corrected before it can become a fixed habit. Constant vigilance and attention to every detail by the coach is an absolute requisite.

264. *Use of dummy cartridges in rapid fire.*—*a.* The tendency to flinch is eliminated by using clips in which half the cartridges are range dummy. The dummy and live cartridges are put into the clips by the coach in such a way that the pupil can not know which will go off and which will not. Then if he is not squeezing the trigger with a steady pressure he will flinch, or shove the shoulder forward to meet the shock, when there is a dummy in the chamber and no shock occurs. The flinch is then apparent to the coach and to everyone in the vicinity, including the man doing the flinching. The result is that he makes a determined effort to squeeze the trigger with a steady pressure for all shots, so as not to appear foolish both to the observers and to himself. During this kind of practice the coach must watch the firer closely to see that he does not look into the chamber in an attempt to see which cartridges are loaded and which are dummies. If he is allowed to look into the chamber while working the bolt the value of the practice is lost and a very bad shooting habit is acquired.

b. Range dummy cartridges, very similar in appearance to the service ammunition, are issued by the Ordnance Department for this purpose. They are issued to use on the rifle range with loaded cartridges, and this is the only use of them which is permitted. Practice dummy cartridges of such shape and color as to be readily distinguishable from the service cartridge must be used in all other exercises requiring the use of dummy cartridges.

c. It is advisable to have each order, when it comes to the firing point, simulate a score of rapid fire, using dummy cartridges or having the cut-off turned down.

265. *Use of spotters in rapid fire.*—Spotters will be used in rapid fire. When the target is run up to be marked, with a spotter in each shot hole, a picture of the group is obtained immediately. If enough issue spotters for this purpose are not available, each organization commander will have enough made for his organization. Spotters can be made out of cardboard and ordinary baling wire. A good tin spotter can also be made out of the tops of small cans.

266. *Duties of the coach in rapid fire.*—*a.* The coach observes the pupil carefully and corrects all errors. He pays particular attention to the following points:

(1) That the sights are blackened and that they are set at the proper range.

(2) That the gun sling is properly adjusted.

(3) That the pupil assumes the correct position.

(4) That he takes up the slack promptly.

(5) Whether or not the pupil flinches (by watching his eye).

(6) That he works the bolt rapidly.

(7) That while working the bolt the pupil keeps his eye on the target, the rifle to his shoulder, and his elbows in place.

(8) That he reloads the magazine from a clip properly and quickly.

b. These operations follow each other, and the coach can watch each in turn. The coach will also at times watch the pupil's back to see if he holds his breath while firing each shot. In the case of a difficult pupil it is advisable to have two coaches watching him fire.

c. Any lack of a smooth and rapid bolt operation indicates that the preparatory training has not been sufficient, and additional preparatory rapid-fire practice will be given.

267. *Final word.*—Good shooting is a matter of instruction and not of mere practice. It requires no inborn talent. If the instruction is good, the shooting will be good. Practice without the proper instruction will produce only a small percentage of good shots, and those only after they have learned by long experience what they should have been taught in the beginning.

268. *Basis of comparison.*—In competitions between organizations, and in making a comparison as to relative results obtained in target practice, the basis of comparison should be the average score per man. This is found by adding together the scores of all men completing the record course and dividing the sum by the number of men who completed the course.

THE AUTOMATIC RIFLE

(T. R. 150–30)

		Paragraphs
SECTION I.	General provisions	269
II.	Mechanical training	278
III.	Preparatory range training	293
IV.	Range practice	307
V.	Personnel to fire—Courses to be fired—Qualification	336
VI.	Records and reports	345
VII.	Combat use of the automatic rifle	348
VIII.	Advice to officers in charge of automatic rifle Instruction	355

SECTION I

GENERAL PROVISIONS

269. *Scope.*—This regulation prescribes rules and regulations applicable to the general subject of automatic rifle marksmanship.

270. *Object.*—The object of this regulation is to provide a thorough and uniform system of conducting automatic rifle marksmanship training in the military service.

271. *Outline of training.*—*a.* Training in automatic rifle marksmanship consists of the following phases:

(1) Mechanical training.
(2) Preparatory range training.
(3) 1,000-inch range practice.
(4) Known distance range practice.

b. A thorough course in rifle marksmanship should precede training in automatic rifle marksmanship.

c. Phases (1) and (2) above may be taken up concurrently, and should be followed in order by (3) and (4).

272. *Methods of instruction.—a.* The methods of instruction to be followed are prescribed in detail in Sections II, III, and IV.

b. Instructors in automatic rifle marksmanship should be familiar with the methods and procedure observed in training in rifle marksmanship.

c. Before commencing a course in automatic rifle marksmanship instructors and assistant instructors should familiarize themselves with Section IX.

d. For general data, stripping and assembling, functioning, care, and cleaning of the automatic rifle see Weapons—the automatic rifle, page 23.

273. *Duties of commanders.—a.* The duties of higher commanders in connection with training in marksmanship, the automatic rifle, are similar to those prescribed in "Marksmanship, the rifle," preceding.

b. In addition to the duties referred to in the preceding subparagraph, the following duties are also prescribed:

(1) (*a*) The company commander will require all men in his company before firing to qualify both in the mechanical training prescribed in Section II and the preparatory range training prescribed in Section III.

(*b*) He will see that all guns are kept in good condition, especially during 1,000-inch firing when the entire squad is using one gun.

(*c*) He will select from the men who have fired the automatic rifle for record those who will be assigned as automatic riflemen. In making these selections, it must be borne in mind that the automatic rifle operates by fire power only; that its fire equals that of several rifles; and that it should, therefore, be in the hands of the best shots.

(2) The platoon leader will examine all automatic rifles in his platoon to determine whether or not they are serviceable. Sights will be aligned and the proper functioning and adjustment of the recoil mechanism, trigger mechanism, and the gas ports verified. Magazines will be examined.

274. *Automatic rifle practice season.—a.* Subject to ammunition allowances, the corps area or department commander will designate a period of not less than 2 weeks for automatic rifle target practice. This period should normally follow the regular rifle practice season at an interval of not more than 2 weeks.

b. The automatic rifle practice season for units of the National Guard and Organized Reserves will be of such duration

and ordered at such times as may be best suited for effective training.

275. *Individual classification of automatic riflemen.*—*a.* Automatic riflemen are classified as expert automatic riflemen, automatic rifle sharpshooters, automatic rifle marksmen, and unqualified, according to the proficiency exhibited in record practice.

b. The unqualified class includes all persons on the rolls of an organization at the close of the practice season who fired a record course and failed to qualify as automatic rifle marksman, or better, and all who for any reason did not fire.

276. *Insignia.*—All enlisted men who qualify in record practice with the automatic rifle will receive insignia as prescribed in AR 600–35.

277. *Minimum standard of proficiency.*—In order to be classed as proficient in automatic rifle training every company or like organization must qualify as automatic rifle marksmen, or better, at least 80 per cent of all persons who fired a qualification course during the season's practice.

Section II

MECHANICAL TRAINING

278. *Object.*—Mechanical instruction is designed to give the soldier such training as will insure his ability to maintain the continued successful mechanical operation of the automatic rifle. A rifle is of no use tactically unless it works successfully mechanically.

279. *When taken up.*—Mechanical training precedes 1,000-inch range practice. It may be carried on concurrently with the preparatory range training prescribed in Section III.

280. *To whom applicable.*—Each man who is to fire the 1,000-inch range practice takes the entire mechanical training.

281. *Organization of class.*—In the company or platoon, all enlisted men are combined into one class under officer-instructors. Each sergeant supervises his own section as assistant instructor, and each corporal acts as instructor for his squad.

282. *Method of instruction.*—*a.* To secure uniformity, instruction is given to the entire class at one time.

b. The instructor prefaces his discussion with a brief general lecture leading up to the specific subject in hand. He then makes detailed explanations and demonstrations as he proceeds.

c. The instructor again explains the work covered in the lecture while one man in each squad performs it. The other members of the squad observe the work of this man.

d. Each member of the squad then repeats the work, checked by the others. This is continued until all men are proficient and able to perform the particular operation.

e. As squad leaders deem certain men proficient, they examine them and report their qualification to the platoon leaders.

283. *Equipment.—a.* The equipment required for each lesson is listed in the paragraph outlining that lesson.

b. A classroom equipped with a blackboard and platform for the instructor is desirable. Seats are provided for the entire class, and one table per squad sufficiently large to permit the entire squad to be grouped around it while working on the automatic rifle.

284. *Classroom regulations.—a.* The following regulations will be observed in the classroom:

(1) Force will not be used in stripping or assembling.

(2) The piece is not stripped or assembled against time.

(3) The trigger mechanism is not stripped and assembled blindfolded.

b. (1) *Force.*—The rifle is so constructed that it can be taken apart and reassembled without the use of force. Most of the parts are designed to prevent wrong assembling. When difficulty arises in stripping and assembling, it is due to error on the part of the soldier. The use of force will result only in damage to the rifle.

(2) *Time.*—The practice of stripping and assembling against time serves no useful purpose and results in burring and damaging parts. As men become more familiar with the rifle, skill is gradually developed and lost motion eliminated. In stripping, the men are taught to lay the parts out in the proper sequence for assembling, and should so thoroughly learn the mechanism of the rifle that taking it apart and putting it together are matters of second nature.

(3) *Trigger mechanism.*—The purpose of stripping and assembling blindfolded is to train men to be able to do these operations at night. As the trigger mechanism is not a part of field stripping, it will rarely ever be stripped at night, even in action. Breakages in the trigger mechanism are very rare.

285. *Division into lessons.—a.* Mechanical training is divided into six lessons and an examination:

(1) General data, field stripping and assembling (par. 286).

(2) Stripping and assembling of the trigger mechanism (par. 287).
(3) Miscellaneous lesson (par. 288).
(4) Functioning (par. 289).
(5) Stoppages and immediate action (par. 290).
(6) Care of the automatic rifle (par. 291).
(7) Examination (par. 292).

b. The first five lessons are taken up in the sequence named. Instruction in the sixth may be given at any time during the training. The examination is given after all six lessons have been completed.

286. *Outline of lesson on general data, field stripping, and assembling.*—*a.* The following equipment is provided for instructional purposes:

(1) Equipment for the instructor:
Automatic rifle.
Spare parts kit (complete).
Dummy cartridges.
(2) Equipment for the squad:
Same as for the instructor.

b. The instructor covers the following points in his preliminary talk:

(1) Name and type of weapon.
(2) Cooling system.
(3) Operation.
(4) Magazines.
(5) General data.
(6) Positions and rates of fire.

c. The first five points are explained in detail in "Weapons."

d. The automatic rifle can be fired from any position prescribed for the service rifle. Due to its weight, it is fired from the prone position from a rest whenever possible. Although it is capable of firing 150 rounds per minute, semiautomatic fire, the best results will be obtained when the rate is from 40 to 60 rounds per minute.

e. The instructor, with an automatic rifle in his hands, then points out, names, and describes the various parts externally visible.

(1) Flash hider.
(2) Front sight carrier and blade.
(3) Barrel.
(4) Gas cylinder tube bracket, female (on barrel).
(5) Gas cylinder tube bracket, male (on gas cylinder tube).

(6) Gas cylinder tube.
(7) Gas cylinder (screwed in end of gas cylinder tube).
(8) Gas cylinder lock (a split pin through gas cylinder head). (The holes around the head of the gas cylinder have nothing to do with the gas. They are for the use of the combination tool in unscrewing the gas cylinder. There are three circles on the face of the gas cylinder which serve as an index of the gas port that is registered. The gas cylinder is ordinarily set with the smallest circle next to the barrel. This position usually gives enough gas.)
(9) Gas escape holes. (Six small holes at forward end of the gas cylinder tube.)
(10) Front swivel bracket.
(11) Forearm, wood.
(12) Forearm screws.
(13) Ejection opening.
(14) Gas cylinder tube retaining pin.
(15) Hammer pin hole.
(16) Rear sight.
(17) Butt stock.
(18) Butt stock plate.
(19) Butt plate trap.
(20) Operating handle.
(21) Bolt guide. (Small rectangular piece of metal just below operating handle.)
(22) Change lever.
(23) Three letters F. A. S.:
(F. Semiautomatic.)
(A. Automatic.)
(S. Safety.)
(24) Trigger guard retaining pin.
(25) Magazine opening.

f. The instructor then slowly strips the rifle, exclusive of the trigger mechanism and buffer, holding up, naming, and describing each part as he removes it. Attention is called to all cams, lugs, and springs, but their functions are not explained. The piece is assembled in the same manner. After this explanation the instructor again describes, step by step, how to strip and assemble the rifle, naming and describing each part as before. One man at each table imitates him. Men should not be permitted to go ahead of the instructor. Assistant instructors keep the backward men up with the explanation.

g. Steps in stripping and assembling are taken up as prescribed in paragraphs 42 to 46.

h. When the above demonstration has been completed once, the remaining members of the squad strip and assemble the piece, naming and describing each part as it is removed. The other members of the squad stand by them, with prescribed Training Regulations covering this subject, and correct errors. Instructors supervise and assist students and see that mistakes are corrected. They examine men whom they believe to be qualified and report their qualification to the senior instructor.

i. After all men become thoroughly proficient in stripping and assembling, if time permits, they may be required to strip and assemble the rifle blindfolded. Instructors supervise this instruction to prevent wrong assembly o forcing of parts. Assistance is given if necessary. Any part called for by its right name is furnished to the one performing the work.

The members of the squad not performing the work blindfolded may be profitably employed by having other members of the squad place parts of the rifle in their hands so they can not see the parts. This drills the squad in recognizing the parts by sense of touch.

The purpose of this instruction is to train the soldier so that he can replace broken parts and reduce stoppages in the dark.

j. Nomenclature is not taken up as a separate subject. The soldier will become famil ar with it during the periods of preliminary instruction.

287. *Outline of lesson on stripping and assembling of trigger mechanism.—a. Equipment.*

(1) Equipment for the instructor:

Automatic rifle.

Dummy cartridge.

(2) Equipment for the squad: Same as for instructor.

b. Explanation.—The instructor with the trigger mechanism in his hand explains in detail the stripping and assembling, holding up each part and naming it. Attention is called to all cams and lugs, but their functions are not explained.

c. The sequence and method of stripping and assembling the trigger mechanism is taken up as prescribed in paragraphs 42 and 44.

d. After the instructor has completed the stripping and assembling of the trigger mechanism he repeats it, with one man of each group imitating him. This work is carried on until all men are able to strip and assemble the mechanism and name each part.

288. *Outline of miscellaneous lesson.—a. Equipment.*

(1) Equipment for the instructor:

Automatic rifle.
Magazine.
Magazine filler.
Spare parts kit (complete).
Dummy cartridges.

(2) Equipment for the squad: Same as for the instructor.

b. The following subjects will be taken up in this lesson and explained as prescribed in "Weapons."

(1) Stripping and assembling of magazine.
(2) Method of filling and inserting magazine.
(3) Spare parts and accessories.
(4) Stripping and assembling of buffer.
(5) To remove firing p n without stripping the piece.
(6) To remove extractor without stripping the piece.

c. Procedure for students.—At the completion of this lecture the same procedure is followed as in the previous lessons.

289. *Outline of lesson on functioning.—a. Equipment.*

(1) Equipment for the instructor:

Automatic rifle.
Charts.
Models.

(2) Equipment for the squad: Automatic rifle.

b. Lecture.—The instructor gives a brief lecture explaining in detail the differences between recoil-operated and gas-operated weapons, and the fact that all automatic weapons must have mechanical means for performing the functions of extraction, ejection, feeding, locking the breech while there is a high pressure in the bore, and igniting the cartridge. He defines and illustrates any mechanical terms which he may use. For example: "To cam" is to change the direction of motion of a part by means of sliding contact between two surfaces.

Operations such as extraction and ejection are performed by various cams, lugs, and springs, and the energy necessary to perform this work and to overcome friction in the rifle is derived from the explosion of the powder in the chamber.

The instructor explains that these operations have a certain sequence in various weapons; that some of them are concurrent; and that the student will be expected to learn and understand the various operations and the sequence in which they occur.

The use of an assembled rifle, parts of a rifle, drawings and sectional views, combined with motion pictures and wooden models of the trigger and bolt actions, will greatly aid in this explanation.

It is not necessary that the soldier memorize the distances and details of the functioning, but he will be given an approximate idea of these. For example: He should understand that the backward travel of the bolt is very slight when the bolt lock is drawn completely down, but that, on the other hand, the slide moves a considerable distance.

c. Detailed functioning.—The instructor will be guided by the text which pertains to the functioning of the recoil and trigger mechanisms. (See "Weapons.")

d. Procedure for class.—After the lecture by the instructor the class follows the same procedure as in the previous lessons. Each man must be able to describe what takes place in each of the operations before he is qualified.

290. *Outline of lesson on stoppages and immediate action.*—*a. Equipment.*

(1) Equipment for the instructor:

Automatic rifle.
Magazine.
Spare parts kit.
Cleaning rod.
Dummy cartridges.
Broken firing pins.
Empty cartridge cases.
Blown primers.
Front part of ruptured cartridge cases.

(2) Equipment for the squad: Same as for the instructor.

b. Preliminary talk.—The instructor in his preliminary talk covers the following points:

(1) Classes of stoppages.
(2) Causes of stoppages.
(3) Method of reducing stoppages.
 (*a*) Boundaries of positions of stoppages.
 (*b*) Use of tables of stoppages.

The following will also be covered in the preliminary talk:

(4) Immediate action.

c. Immediate action.—(1) *Definition.*—Immediate action is the automatic application of a probable remedy for a stoppage.

(2) *Procedure.*—(*a*) *First step.*—If the rifle does not fire, TAP THE MAGAZINE, PULL BACK OPERATING HANDLE,

REAIM, and TRY TO FIRE AGAIN. (This is the first thing to do in case of any stoppage. It will reduce practically 90 per cent of those that occur.)

(*b*) *Second step.*—If the rifle still does not fire, pull back operating handle easily to determine position of hammer pin, and then drop out magazine.

(*c*) *First position stoppages.*—If the stoppage is in the FIRST POSITION, pull operating handle all the way back and watch ejection.

1. If nothing is ejected, change magazine.

2. If loaded shell is ejected, change firing pin.

3. If empty cartridge case is ejected, examine and correct adjustment of gas cylinder, turning to the next larger port if necessary.

(*d*) *Second position stoppages.*—If the stoppage is in the SECOND POSITION, feel for obstruction or burr on face of bolt, in rear end of chamber, in bolt lock recess, or on bolt lock.

(*e*) *Third position stoppages.*—If the stoppage is in the THIRD POSITION—

1. Use ruptured cartridge extractor to remove front part of ruptured case from the chamber. (If no ruptured cartridge extractor is available, oil and sand nose of bullet, put it in chamber, and let bolt go forward. Pull back operating handle. This will usually extract the ruptured cartridge. Clean and oil chamber after doing this.)

2. If stoppage recurs and is not due to a ruptured cartridge, examine face of bolt for obstruction.

(*f*) *Fourth position stoppages.*—If the stoppage is in the FOURTH POSITION—

1. If slide moved after trigger was pulled, use cleaning rod to push cartridge case from the chamber. If this stoppage recurs, clean and oil chamber and ammunition as a temporary corrective.

2. If trigger can not be pulled, or if the slide does not move when trigger is pulled—

(a) See if change lever is set on "Safe."

(b) Take out trigger guard and correct fault in the trigger mechanism.

d. Procedure.—After the instructor has finished his talk, he again describes and demonstrates immediate action step by step, with one man at each table imitating him. After this, one man from each table group is sent out of the room while the remaining men at each table set up a stoppage as directed

by the instructor. The men are then called back and told that the gun is ready to fire. They are required to follow the immediate action procedure. This is continued until all men are proficient.

e. UNLESS ON THE RANGE AND ACTUALLY ON THE FIRING POINT, ALL ROUNDS ARE CHECKED TO INSURE NO LIVE ROUNDS ARE USED.

291. *Outline of lesson on care of the automatic rifle, and points before, during, and after firing* (*B. D. A.*).—This lesson will be a lecture covering care and cleaning, and points to be observed before, during, and after firing.

292. *Examination on mechanical training.*—The following questions constitute the examination on mechanical training:

Q. What is the name of the rifle?—A. The Browning automatice rifle, model of 1918.

Q. What type weapon is it?—A. Shoulder weapon, gas operated, air cooled and magazine fed.

Q. How is the barrel cooled—A. There is no special cooling device. The barrel is merely exposed to the air.

Q. What is meant by gas operated?—A. All of the functions of the rifle, such as extraction and feeding, are accomplished by a small portion of gas escaping through a port in the barrel and impinging on a piston.

Q. How many rounds are carried in the magazine?—A. Twenty.

Q. How much does the rifle weigh with sling and without magazine?—A. 15 pounds, 8 ounces.

Q. From what positions may the rifle be fired?—A. From any of the positions used with the service rifle.

Q. What is the best rate of fire?—A. Semiautomatic fire at the rate of 40 to 60 shots per minute.

Q. What is meant by semiautomatic fire?—A. Pulling the trigger for each shot that is fired.

Q. Who carries the automatic rifle in the squad?—A. No. 3, rear rank.

Q. How is the ammunition for the automatic rifle carried in the squad?—A. The automatic rifleman carries 10 magazines and other men in the squad except the rifle grenadier carry 2 magazines.

Q. How is the automatic rifle stripped and assembled?—A. (Man being examined strips and assembles the rifle, naming parts.)

Q. How is the trigger mechanism stripped and assembled?—A. (Man being examined strips and assembles trigger mechanism, naming each part.)

Q. What care must be taken of the magazines?—A. The magazines will be kept cleaned and well oiled. They will not be dented or bent.

Q. How are the magazines filled?—A. By placing the magazine filler over the magazine and loading four clips in the same manner as in the service rifle.

Q. How are the magazines loaded into the rifle?—A. (Man being examined loads rifle and releases magazine.)

Q. What do the letters F. A. S. on the receiver mean?—A. The letter "F" means semiautomatic fire; the letter "A" means automatic fire; and the letter "S" means safety.

Q. Why should the spare parts kit be carried?—A. Because it contains equipment which is necessary to keep the rifle in action.

Q. What is the buffer and why is it placed in the rifle?—A. The buffer is a series of cups and cones and a heavy spring, enclosed in a tube, which is in the butt stock. The slide strikes the buffer head, slowing up the speed of automatic fire and taking up practically all the recoil.

Q. How is the firing pin removed without stripping the rifle?—A. (Man being examined shows how it is done.)

Q. How is the extractor removed without stripping the rifle?—A. (Man being examined shows how it is done.)

Q. Describe briefly what takes place in the first phase of functioning.—A. The powder is ignited and the bullet goes out of the barrel. Some of the gas escapes through the gas port into the gas cylinder, where it strikes on the head of the piston driving it to the rear. During the rearward motion the processes of extraction and ejection are effected.

Q. Why does the rifle fire single shot when the change lever is turned to F?—A. Because the lug on the shank of the change lever is turned away from the toe of the connector, allowing the connector to rise until the cam surface on the rear of the head of the connector strikes the cam surface on the sear carrier, thereby forcing the head of the connector out from under the sear.

Q. Why can not the trigger be pulled when the change lever is set on S?—A. Because the change lever is turned so that the

solid portion of the shank of the change lever is struck by the shoulders of the trigger.

Q. What is the first thing to do in case of any stoppage?—A. Tap the magazine, pull back the operating handle, re-aim, and try to fire again.

Q. What is the next thing to do in case you have tried to fire again and the stoppage recurs?—A. Pull back the operating handle slowly until it strikes the hammer pin and see what is the position of the stoppage; drop out the magazine; and then apply immediate action.

Q. What are the three stoppages in the first position?—A. Failure to feed, failure to fire, and insufficient gas.

Q. What things may cause failure to fire in the first position?—A. Defective ammunition, broken firing pin, weak recoil spring, and too much friction.

Q. What usually causes a failure to feed?—A. Magazine trouble.

Q. How can you tell when the rifle is not getting enough gas?—A. The rifle will fire but the bolt will not go to the rear.

Q. If your rifle is giving you trouble, due to failure to extract, what is probably the trouble?—A. The chamber of the rifle has not been properly cleaned.

Q. In what way does cleaning the automatic rifle after firing differ from cleaning the service rifle?—A. It is necessary to clean the piston, gas cylinder, chamber, and magazines, as well as the bore.

Q. How is the barrel cleaned?—A. The barrel is cleaned from the muzzle. It can not be cleaned with oil. Powder solvent or hot soapy water should be used; it should afterwards be wiped dry and oiled lightly.

Q. How should the rifle be oiled?—A. The rifle should be oiled by wiping a thin film of oil over all parts after cleaning. While firing in the field a light film of oil should be placed on the working parts, especially points where a great deal of friction occurs.

Q. Why can not the barrel be removed and cleaned from the muzzle?—A. The barrel should never be removed until it is worn out. It is very difficult to replace the barrel as tightly as it should be, and as soon as the barrel works loose the rifle will develop head-space trouble.

Section III

PREPARATORY RANGE TRAINING

293. *Object.*—Preparatory range training provides instruction and drill for the soldier, prior to firing with live ammunition, in the correct methods of shooting the automatic rifle. Combined with previous experience in handling the service rifle, and the mechanical instruction covered in Section II, it enables him to go to the range well prepared.

294. *When taken up.*—Preparatory range training precedes 1,000-inch range practice. It may be carried on concurrently with the mechanical training prescribed in Section II.

295. *To whom applicable.*—Each man who is to fire the 1,000-inch range practice takes the entire preparatory range training. No distinction is made between recruits and men who have previously had range practice.

296. *Organization of class.*—The organization of the company or platoon for preparatory range training will be as described for mechanical training in paragraph 13.

297. *Method of instruction.*—*a.* The instructor introduces each step in the preparatory range training by explaining and demonstrating to the entire class the exercises to be covered, tells why each is done, and its application to automatic rifle training. He then instructs the squad leaders as to the manner of carrying on the squad training in that phase so that all men will obtain the greatest benefit from the time devoted to instruction.

b. Each squad leader leads his squad to its assigned area and conducts the work in the phase of preparatory range training that has just been demonstrated and explained.

c. The work in the squad is carried on by the coach and pupil method, so that men coach each other when not under the instruction of an officer or noncommissioned officer. A general description of this method is found in paragraph 201*b*.

d. The instruction of each man continues until he understands and is able to explain each point in his own words.

e. A record of each man's work is kept by the squad leader on the blank form described in Section VI. As squad leaders deem certain men proficient, they examine them, and report their qualifications to the platoon leader.

f. A separate record of each man's work is also kept by the platoon leader on another copy of the same form.

g. Exactness in detail in all parts of this training is the object of each man. When carrying out any phase of the training he will have a coach beside him to watch for and correct errors.

298. *Equipment.*—Company commanders issue sufficient spare automatic rifles, if available, to provide an average of one for each three men engaged in preparatory range work. The additional equipment required for preliminary range work with each automatic rifle consists of a sandbag and one set of the apparatus prescribed for the rifle in paragraph 203. The equipment needed by the instructor during his talk is an automatic rifle and the additional equipment mentioned above.

299. *Phases of preparatory range training.*—*a.* There are seven steps in the preparatory range training—

(1) Sighting (par. 300).
(2) Positions (par. 301).
(3) Trigger squeeze (par. 302).
(4) Rapid fire (par. 303).
(5) Effect of wind, sight-setting and sight-changing exercises (par. 304).
(6) The score book (par. 305).
(7) Examination (par. 306).

b. The first four steps are taken up in the sequence named. Instruction in steps (5) and (6) may be given concurrently with the first four or at any time during the training. The examination is given after all the other steps have been completed.

300. *Sighting.*—*a.* The rear sight on the automatic rifle consists of a large aperture in a small disk. It is graduated for elevation in even hundreds of yards. The sight is set by placing the index line on the rear sight slide opposite the index mark indicating the desired range. No wind gauge is provided. This necessitates holding to the right or left to compensate for wind.

b. The alignment of the sights alone, and on a bull's-eye in sighting, is as prescribed for the rifle in paragraph 204. Because of the large aperture, a little difficulty may at first be encountered in centering the top of the front sight. As the eye becomes accustomed to the large sight it will be found that the front sight centers itself automatically. The soldier must look through the aperture and not at it, and the eye must be focused on the target and not on the front sight. The aperture and disk will then appear somewhat blurred. The top of the front

sight is aligned in the middle of the blur. Gradually the centering of the front sight in the aperture becomes automatic and ability to take quick aim is increased. The large rear sight is necessary in order to readily pick up the target and keep it in view when firing rapidly.

c. Exercises with the sighting bar as prescribed for the rifle may be included in the work on sighting or omitted at the discretion of the senior instructor.

d. The second and third sighting exercises prescribed for the rifle in paragraphs 205 and 206 will be carried out with the automatic rifle.

301. *Positions.*—*a.* The provisions relative to positions and position exercises for the rifle, as modified in the following subparagraphs, apply to and will be observed in automatic rifle training, excluding, however, the standing position and use of the aiming device.

b. In all firing positions the soldier is taught to keep his eye as close to the rear sight as possible. Due to the lack of recoil the eye may be placed against the rear sight without danger.

c. The soldier is taught to use the gun sling in all positions and at all times, for, since the automatic rifle is heavier and is fired more rapidly than the service rifle, it will be correspondingly more difficult to hold steadily except that use of the sling may be optional in the prone-with-a-rest position.

d. The particulars in which the positions with the automatic rifle differ from those with the service rifle are—

(1) *General.*—The automatic rifle will not be fired in the left-handed position.

(2) *Prone.*—The body of the firer is placed directly behind the rifle, and not at an angle. This is permitted by the shortness of the stock.

(3) *Prone with sandbag rest.*—The gas cylinder tube is supported by the sandbag. The hand and forearm of the firer do not touch the sandbag. When first adjusted to the firer, the sandbag should be too high, that is, high enough so that the aim of the firer will not be lower than the top of the bull's-eye on the target. Further adjustment is made by pushing down on the barrel until the sights are aligned on the proper place on the target. Any tendency to have the sandbag too low must be promptly checked by the coach.

e. All positions must be so comfortable and steady that after each shot the automatic rifle will come back to the same point on the target. In practicing this, the soldier takes position, sights on the target, closes his eyes and holds easily. On open-

ing the eyes, if the position is correct, the gun is still aimed on the target. This is essential to maintaining a rate of fire of 40 to 60 shots per minute.

f. The exercises prescribed in *e* and in positions as prescribed for the rifle, excluding the standing position and use of aiming device, will be carried out with the automatic rifle.

302. *Trigger squeeze.*—*a.* The proper method of squeezing the trigger is the same as prescribed for the rifle. With the automatic rifle it is necessary to discontinue the squeeze after the shot is fired in order that two shots will not be fired automatically.

b. Trigger squeeze exercises requiring practical work need not be carried out during preparatory range training with the automatic rifle if the men under instruction have gone through this phase of training with the service rifle and thoroughly understand it.

303. *Rapid fire.*—*a.* Rapid fire exercises enable the soldier to gain dexterity in the manipulation of the automatic rifle. Efficient manipulation is an important factor in automatic rifle firing.

b. Rapid-fire exercises are held at short ranges with "D" targets in frames as aiming points. The exercises include observance of the principles of sighting, positions, and trigger squeeze, as taught in the preceding exercises.

c. During firing it is essential that every man count his shots, so that he will know when the last one has been fired and the magazine is empty. This prevents sending the bolt home on an empty chamber, which would necessitate pulling back the operating handle, and so waste time. During preparatory range practice, the bolt being left in the forward position and the change lever being set at "F," firing is simulated by pressing the trigger until it clicks for each shot.

d. When the last shot in the magazine is fired, the bolt being in the rearward position and the rifle held horizontally, the automatic rifleman pushes the magazine release with his right thumb and the magazine falls out of its own weight.

e. Full magazines are so placed in the belt that when grasped and carried forward by the right hand the long portion will be to the rear. Thus they may be readily inserted in the magazine opening in the receiver.

f. Empty magazines are picked up and placed in the magazine belt.

g. Each soldier changes his own magazines. He must be able to do it in 2 to 4 seconds while in any position. He tests all



PLATE 1



PLATE 2

magazines before firing to see that they will fall out of their own weight when empty.

h. These operations are taught as a drill, in which the following points should be carefully observed:

(1) Magazines are placed in the magazine belt so that, when grasped and carried forward by the right hand, the long portion will be to the rear.

(2) Each man should count his shots.

(3) Magazines are dropped out after the twentieth shot.

(4) All magazines to be used fall out of their own weight when empty.

(5) The new magazine is drawn from the belt and placed in the receiver with one rapid, smooth movement.

(6) Empty magazines are replaced in the belt.

The drill is conducted as indicated in Plate 3.

304. *Effect of wind, sight-setting and sight-changing exercises.*—*a.* See paragraph 233.

b. Wind from either side blows the bullet out of its path. This movement must be allowed for by aiming off toward the side from which the wind is blowing.

c. The amount the bullet will be blown from its path depends on the force and direction of the wind and the distance to the target. The approximate windage correction for the first shot can be determined by applying the wind rule formula described in paragraph 234.

d. During range practice the amount to aim off after the first shot is fired is readily determined from the position of the spotter on the target.

e. Wind rule.—Same as for rifle (pars. 234 and 235).

f. Mirage.—See paragraph 236.

g. Elevation rule.—See paragraph 237.

h. Light.—See paragraph 238.

i. Canting the automatic rifle.—See paragraph 240.

j. Sight-setting and sight-changing exercises similar to those prescribed for the rifle, paragraph 242, may be given in the discretion of the instructor.

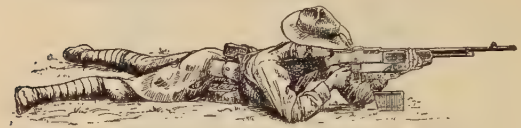
305. *The score book.*—*a.* The use by the soldier of a score book to keep a personal record of the results and conditions of his firing throughout the period of range practice is as necessary with the automatic rifle as with the service rifle. The same score book as prescribed for the rifle is used for the automatic rifle.



Firing



Pressing in magazine release with right thumb



Magazines should be sufficiently smooth to drop out



New magazine





Reaching for old magazine



Replacing old magazine in belt before refiring

PLATE 3.—Changing magazine drill

b. The use of the score book for the automatic rifle is in general as prescribed for the service rifle in the score book. Certain variations are noted in the following subparagraphs:

c. The aiming point used for each shot is plotted in the column headed "W. G." Upon completion of the score no entry is made after the words "Zero Windage." In place of zero windage the aiming point for the rifle at that range is determined, and its location indicated by an "X" on the recording target.

d. In the Table of Wind Allowances, in the score book, the column headed inches indicates the distance to aim off with the first shot for any direction and velocity of wind.

e. Exercises in plotting data in the score book, as prescribed in paragraph 244 may be given at the discretion of the instructor.

306. *Examination.—a.* Preparatory range practice is concluded by an examination consisting of the following questions. The questions are answered by the soldier in his own words.

Q. Explain the difference between sighting with the service rifle and the automatic rifle.—A. There is no difference. The rear sight on the automatic rifle has a larger peep. The front sight is centered as in aiming the rifle.

Q. Why is the large peep necessary?—A. In order that the target can be picked up rapidly and held while firing at a rapid rate.

Q. From what positions may the automatic rifle be fired?—A. It may be fired from any of the positions prescribed for the service rifle.

Q. Demonstrate each position.—A. (Soldier demonstrates.)

Q. What is the best position from which to fire the automatic rifle?—A. Because of its weight it should be fired from the prone position with a rest, whenever possible.

Q. Why is it important to use the sling with the automatic rifle?—A. Because the rifle must be held very steadily in order to fire accurately at a rate of 40 to 60 shots per minute.

Q. When firing semiautomatically at the rate of 40 to 60 shots per minute, are all shots aimed shots?—A. Yes, all shots are aimed shots, although it is not possible to take as fine a sight as in slow fire. The correct position is so steady that after each shot the gun will return to the target and it is necessary only to glance along the sights to see that they are properly aligned.

Q. Explain the trigger squeeze with the automatic rifle.—A. The trigger squeeze with the automatic is the same as with the rifle. However, the trigger must be squeezed all the way to the rear and released before the next shot can be fired.

Q. Explain why it is necessary to count every shot.—A. It is necessary to count every shot so that the trigger will not be pulled when the magazine is empty. This saves time, because it avoids the necessity of recocking the piece.

Q. How are the magazines changed while firing?—A. (Soldier demonstrates.)

Q. How is the rear sight set?—A. The rear sight is set by placing the line on the rear sight slide opposite the range. (Soldier demonstrates.)

Q. How is the automatic rifle adjusted for wind?—A. There is no adjustment for wind. It is necessary to hold to the right or left.

Q. Demonstrate how to change magazines in the prone position.—A. (Soldier demonstrates.)

Q. How much, and to which side, is it necessary to aim off at 500 yards to allow for an 8-mile, 3 o'clock wind?—A. Twenty inches to the right.

Q. How are data entered in the score book?—A. (Soldier demonstrates and explains.)

Section IV

RANGE PRACTICE

307. *Purpose.*—Range firing is intended to give the soldier actual practice in the use of his automatic rifle with live ammunition under conditions which permit the result of each shot to be determined. He puts to use the knowledge previously acquired, gains confidence and the ability to shoot accurately and rapidly, and finally by firing for record establishes his classification as an automatic rifleman.

308. *Preliminary training required.*—Before a soldier is permitted to fire the automatic rifle on the range, he shall have completed a thorough course in rifle marksmanship, except where he belongs to an organization that does not include service rifles in its equipment. The soldier must also thoroughly understand stripping and assembling, functioning, care, and reduction of stoppages as outlined in Section II; and have completed preparatory range training as outlined in Section III.

309. *Principles previously learned are applied.*—The principles taught and the methods practiced during preparatory range training and mechanical training must be applied in range practice with live ammunition. The points outlined in paragraphs 310 to 315, inclusive, will also be observed.

310. *Flinching and trigger squeeze.*—Lack of recoil practically eliminates flinching with the automatic rifle. Nevertheless, it is important to squeeze the trigger properly.

311. *Holding during movement of slide.*—It is important to hold steadily and aim accurately, not only before the trigger is squeezed, but also during the time that it takes the slide to complete its forward movement. To the beginner, the forward movement of the slide seems to throw the rifle completely off the target, but experience in firing will prove that this is a negligible factor.

312. *Maintaining prescribed rate of fire.*—*a.* During timed or rapid fire it is essential to maintain the prescribed rate of fire. Therefore the trigger must be squeezed properly and magazines changed without loss of time. The first empty magazine of a two-magazine score need not be replaced in the belt until after the targets have been pulled down.

b. Accuracy must never be sacrificed for speed. It is always better to fire a few well-aimed shots than many unaimed ones.

313. *Blackening sights.*—The front sight of the automatic rifle will be blackened for all range firing.

314. *Pads.*—The use of elbow pads is recommended. Shoulder pads are unnecessary.

315. *Coaches and coaching.*—*a.* The coach and pupil method of instruction used in preparatory range training is adhered to during range practice, except when firing for record.

b. Whenever a man is in a firing position, except in record practice, a coach will be placed beside him to watch him and point out his errors. The coach watches the man. A coach who watches the target is of no assistance to the man firing.

316. *Kinds of target practice.*—Target practice with the automatic rifle is divided into—

a. 1,000-inch range practice, which is carried out on specially constructed or improvised 1,000-inch ranges.

b. Known distance practice on the class "A" rifle range at 200, 300, 500, and 600 yards.

c. Special firings, which include assault fire and antiaircraft fire.

317. *Purpose of 1,000-inch firing.*—The purpose of 1,000-inch range firing is to give the soldier, prior to known distance firing, a certain amount of training with a target of such nature that his errors may be readily detected and pointed out to him. Here he has practice in reloading, aiming, holding, squeezing the trigger, assuming correct positions, executing rapid fire, manipulating magazines, and reducing such stoppages as may occur.

318. *Targets for 1,000-inch firing.*—Automatic rifle targets, Nos. 1 and 2, described in TR 300–100, are used on the 1,000-inch range when available. If not available, the machine gun 1,000-inch target or any paper or cardboard target, approximately 3 by 5 feet, ruled into 2-inch squares, can be used.

319. *Kinds of firings carried out on 1,000-inch range.—a.* Firing on the 1,000-inch range includes—

(1) Immediate action firing (par. 320).
(2) Firing to align front sight (par. 321).
(3) Slow fire (par. 322).
(4) Automatic fire (par. 323).
(5) Timed or rapid fire (par. 324).

b. The tables to be fired will be found in Section V. These tables are meant as a guide. The amount of 1,000-inch firing to be given and the number of shots to be fired at each range will be such as to conform to the authorized ammunition allowances.

320. *Immediate action firing.—a.* Immediate action firing means firing live ammunition in specially prepared magazines containing rounds that have been made defective intentionally so that they will cause certain stoppages. Suggestions for the preparation of such magazines are given in Section IX.

b. The purpose of this firing is to give the soldier practice in reducing stoppages. He must be required to follow implicitly the immediate action procedure that has been taught him. Coaches will give close attention to insure this.

c. The rapidity with which the firing is completed does not necessarily indicate familiarity with immediate action. Elimination of lost motion and the automatic application of immediate action as taught is the result desired.

d. The nature of the stoppages and the order in which they will occur should be unknown to the soldier.

e. During this firing the change lever is set on "A."

f. For 1,000-inch firing an initial setting of 400 yards on the rear sight will be approximately correct. The exact setting is determined by actual firing.

321. *Firing to align front sight.*—*a.* This firing, authorized in Table I, is intended to aid the soldier in aligning the front sight of his automatic rifle. As the Browning automatic rifle, model 1918, is not equipped with a wind gauge on the rear sight, provision has been made so that the front sight may be tapped to the right or left so that it will not be necessary to aim off on account of a defective alignment of the sights. The 1,000-inch range is the best place to do this because the aiming point is small and well defined and atmospheric conditions will have no effect on the flight of the bullet.

b. In firing this table, the soldier aims at the bottom edge of a paster. He fires all five shots of a string semiautomatically and very carefully, using exactly the same aiming point for all five. The center of the resulting shot group indicates how much and in what direction to move the front sight.

c. If the shot group is to the right of the aiming point, move the front sight to the right; if to the left, move the front sight to the left. It should be borne in mind that to move the strike of the bullet 1 inch a range of 1,000 inches requires a movement of the front sight of only 25/1000 of an inch.

d. When the same rifle is being used by a group, the firing of Table I and alignment of the front sight will be executed by any soldier in the group who has qualified in the record course with the automatic rifle. If the group contains no such man, the firing and alignment of the sight will be executed by any member of the group holding the highest qualification with the service rifle.

e. The front sight of the rifle must not be moved after it is once zeroed, except by authority of an officer.

322. *1,000-inch slow fire.*—This practice is prescribed in Table II. If time and ammunition are available, after completing the entire 1,000-inch course once, much benefit may be obtained from firing this table for a second time and also Table IV, timed or rapid fire.

323. *1,000-inch automatic fire.*—The firing of Table III is for the purpose of convincing the soldier that automatic fire is not as efficient as semiautomatic fire. A comparison of his own shot groups, made with automatic and semiautomatic fire, will give him visual proof of the disadvantages of automatic fire.

324. *1,000-inch timed or rapid fire.*—*a.* The fire prescribed in Table IV comprises concentrated and distributed fire delivered

within time limits. It gives the soldier practice in the delivery of timed or rapid fire and also in distribution.

b. In concentrated fire (at the single paster) the shot group should be small enough so that the circumference of a circle 4 inches in diameter will contain it.

c. In distributed fire, the soldier is taught to put one shot in each of the distributed pasters and to place a hit at least every 2 inches along the solid line of pasters. He should understand that every inch on this target, in both elevation and deflection, represents 1 yard at 1,000 yards or ½ yard at 500 yards. It is not contemplated, however, that a high degree of proficiency can at this time be attained on distributed fire.

325. *Known distance practice.—a.* Known distance practice is divided into two phases: Instruction practice and record practice. Three courses (A, B, C) for known distance practice are laid down in Section V. Course A includes firing up to 600 yards. The other two are designed to fit conditions where the firing of Course A is not practicable.

b. Before known distance firing is taken up, the soldier must have completed the course of 1,000-inch firing.

c. The principles taught during mechanical training, preparatory range training, and 1,000-inch firing must be observed during known distance practice.

d. If the prior training has been thorough, the score obtained on the known distance ranges will be good. If the training has been poor or insufficient, known distance practice will invariably reveal the deficiencies.

326. *Instruction practice—Known distance course.—a.* Instruction practice on the known distance range gives the soldier an opportunity to apply the principles of automatic rifle marksmanship by firing with live ammunition, at fixed distances, on clearly defined targets.

b. The order of firing is laid down in the tables of instruction practice for each course. This practice is designed to fit the usual case and is meant to serve as a guide. The procedure may be changed by the officer in charge of the firing when unusual local conditions make such action advisable.

c. The amount of instruction practice is not limited to that prescribed in the tables. Such additional practice as time and ammunition allowance permit will be given.

d. Each person will complete instruction practice before proceeding with record practice.

e. The amount of instruction practice to be given and the number of shots to be fired at each range will be such as to conform to the authorized ammunition allowances.

327. *Record practice—Known distance course.—a.* Following instruction practice, the soldier fires the record practice as a test of his ability as an automatic rifleman and for qualification.

b. The required firing is laid down in the tables of record practice for each course.

c. When record practice is once begun, it is carried to completion before any other practice is permitted.

d. Instruction and record practice will not be conducted simultaneously.

e. Procedure and rules governing record practice are prescribed in order to secure a uniform test throughout the service.

328. *Procedure governing record practice.*—The provisions covering the procedure governing record practice with the rifle apply to automatic rifle record practice with the following changes affecting rapid fire (see Sec. V, p. 147) :

a. The firer is already in the prescribed position at all ranges before the target appears.

b. The firer reloads with a second magazine taken from the belt.

c. All references to 10 shots in rapid fire with the rifle will be understood to mean 40 shots when applied to rapid fire with the automatic rifle.

329. *Rules governing record practice.*—The provisions covering the rules governing record practice for the rifle apply to automatic rifle record practice with the following changes (see Sec. VI, p. 152) :

a. No test of the trigger pull is required before firing.

b. Cleaning is permitted at any time.

c. The provisions relative to misfires and disabled rifles during rapid fire do not apply to the automatic rifle. In the event of a stoppage during rapid fire with the automatic rifle the officer in charge investigates the stoppage and authorizes the score to be fired again if the stoppage is due to faulty ammunition or to failure of some part of the gun, not due to fault of the firer.

d. All references to 10 shots in rapid fire with the rifle will be understood to mean 40 shots when applied to rapid fire with the automatic rifle.

330. *Assault fire.—a.* After the completion of record practice, and subject to authorized ammunition allowances, all men who

have completed record practice, Course A, with the exception of antiaircraft troops, will fire the table of "Assault fire," Section V.

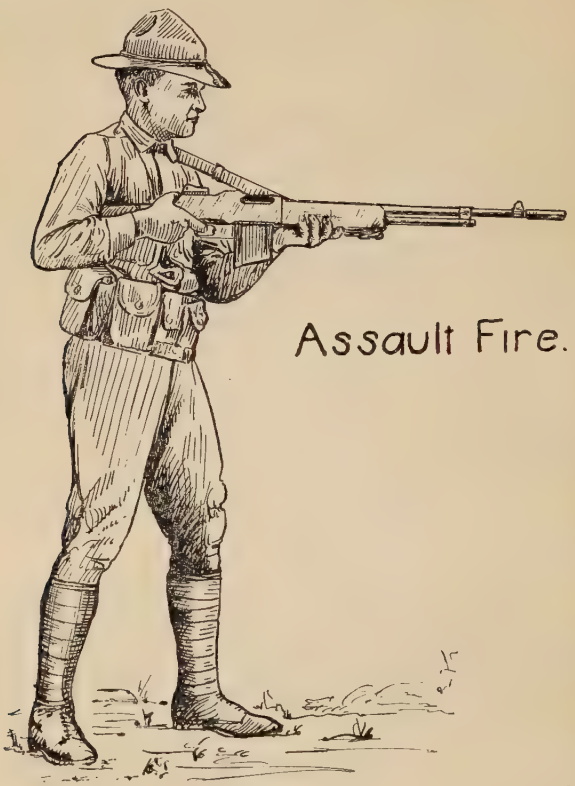


PLATE 4

b. The target is a screen 10 feet long and 3 feet high, with three prone silhouette targets, placed 1 yard apart, directly in

front of the screen. After the firing each soldier marches up to the target to examine the effects of his firing.

c. In firing this table, the automatic rifle is held with the butt under the right armpit, clasped firmly between the body and the upper portion of the arm, the sling over the left shoulder.

331. *Antiaircraft fire.—a.* After the completion of record practice, and subject to ammunition allowances, the table of "Antiaircraft fire," Section V, will be fired by all antiaircraft troops who have completed record practice.

b. The targets for this table will consist of material objects of suitable size which can be made to travel through the air or to travel along the ground at a suitable elevation above the plane of site of the automatic rifles. The following are suggested as suitable targets:

(1) 6 or 9 inch rubber balloons, inflated 30–35 inches in diameter, to be released two at a time. When these balloons have attained an altitude of about 300 yards, fire will be opened upon one of them. If one balloon is destroyed before the required number of rounds has been fired, fire will be switched to the other balloon.

(2) Kites of suitable size towed over approximate courses by automobiles, motor cycles, etc. Fire will be opened when the target arrives within about 800 yards slant range of the automatic rifle pit and continued until the required number of rounds has been fired or the target has been shot down. There should be on hand one kite for every man who is to fire. These kites may be made at any post without expense to the Government.

(3) An object representing an airplane towed along the top of a ridge or cliff at appropriate ranges from an elevation above rifle pits.

332. *Permanent range personnel.*—Those provisions of paragraph 119, which cover "Permanent range personnel," "Range officers," and "Noncommissioned officers in charge of the pit," apply when ranges are in use for automatic rifle firing.

333. *Uniform.*—The uniform to be worn during range practice will be prescribed by the commanding officer.

334. *Equipment.*—The automatic-rifle man's belt will be worn during all range practice.

335. *Safety precautions.—a.* Magazines will not be inserted in automatic rifles in rear of the firing line.

b. All automatic rifles on the range and not in actual use will have the bolt in the forward position and no magazine in the magazine opening.

c. After firing and before leaving the firing point, all persons will be required to remove the magazine and then let the bolt forward.

Section V

PERSONNEL TO FIRE—COURSES TO BE FIRED—QUALIFICATION

336. *Personnel to fire and courses to be fired.*—The following shows a classification of personnel for the purpose of determining who will fire and courses to be fired, subject to ammunition allowances and restrictions as to personnel prescribed annually by the Militia Bureau:

a. Classification of personnel.—In each unit organization equipped with automatic rifles all officers may, and three enlisted men per automatic rifle will, fire such course as is specified annually in orders.

b. Prior rifle qualification.—No enlisted man in organizations armed with the rifle will fire the automatic rifle for record unless he has qualified as an expert rifleman, expert automatic rifleman, rifle sharpshooter, automatic rifle sharpshooter, or automatic rifle marksman during the same or preceding year, except that enlisted men firing rifle courses other than Course A will also be eligible to fire the automatic rifle for record if they have qualified as marksman or better in such other rifle course during the same or preceding year.

337. *Immediate action course.*

Table A

Position	Target	Rest	Kind of fire	Shots	Time
Prone	A. R. No. 1	Sandbag or bipod.	Automatic	One prepared magazine.	No limit.

338. *1,000-inch course.*

TABLE I

Position	Target	Rest	Kind of fire	Shots	Time
Prone	A. R. No. 1	Sandbag or bipod	S–A strings of five shots.	10	No limit.

TABLE II

Position	Target	Rest	Kind of fire	Shots	Time
Prone	A. R. No. 1	Sandbag or bipod	S–A	10	No limit.
Sitting	do	None	S–A	5	Do.
Kneeling	do	do	S–A	5	Do.

TABLE III

Position	Target	Rest	Kind of fire	Shots	Time
Prone	A. R. No. 1	Sandbag or bipod	Automatic in bursts of 3 to 5.	10	No limit.

TABLE IV

Position	Target	Rest	Kind of fire	Shots	Aiming point	Time
Prone	A. R. No. 2	Sandbag or bipod.	S–A	5	Upper paster	8 seconds.
Do	do	do	S–A	10	Row of separated pasters.	15 seconds.
Do	do	do	S–A	[1] 20	Solid row of pasters.	30 seconds.

[1] Two magazines of 10 shots each.

339. *Course A.—a. Instruction practice.*—Known distance firing begins with instruction practice. The minimum course is prescribed in Tables I, II, and III.

TABLE I.—*To be fired twice*

Range	Position	Target	Rest	Kind of fire	Shots	Time
300	Prone	B	Sandbag or bipod.	S–A	10	No limit.
500	do	B	do	S–A	10	Do.
600	do	B	do	S–A	10	Do.

TABLE II

Range	Position	Target	Rest	Kind of fire	Shots	Time
200	Sitting or kneeling.	D	None	S–A	[1] 5	No limit.
200	do	D	do	S–A	[2] 20	40 seconds.
300	Prone	D	Sandbag or bipod.	S–A	[1] 5	No limit.
300	do	D	do	S–A	[2] 20	45 seconds.
500	do	D	do	S–A	[1] 5	No limit.
500	do	D	do	S–A	[2] 20	55 seconds.

[1] Marked after each shot. [2] Two magazines of 10 rounds each will be used.

TABLE III.—*To be fired twice*

Range	Position	Target	Rest	Kind of fire	Shots	Time
200	Sitting or kneeling.	D	None	S–A	[1] 40	1 minute, 10 seconds.
300	Prone	D	Sandbag or bipod.	S–A	[1] 40	1 minute, 20 seconds.
500	do	D	do	S–A	[1 2] 40	1 minute, 40 seconds.

[1] Two magazines of 20 rounds each.
[2] Two sighting shots, marked after each shot, will precede this score.

b. Record practice.—Record practice is prescribed in Tables IV and V.

TABLE IV

Range	Position	Target	Rest	Kind of fire	Shots	Time
300	Prone	B	Sandbag or bipod.	S–A	10	No limit.
500	do	B	do	S–A	10	Do.
600	do	B	do	S–A	[1] 10	Do.

[1] Two sighting shots will precede the score at 600 yards.

TABLE V

Range	Position	Target	Rest	Kind of fire	Shots	Time
200	Sitting or kneeling.	D	None	S–A	40	1 minute, 10 seconds.
300	Prone	D	Sandbag or bipod.	S–A	40	1 minute, 20 seconds.
500	do	D	do	S–A	[1] 40	1 minute, 40 seconds.

[1] Two sighting shots, marked after each shot, will precede the score at 500 yards.

340. *Course B.—a. Instruction practice.*

TABLE I.—*To be fired twice*

Range	Position	Target	Rest	Kind of fire	Shots	Time
200	Sitting or kneeling.	B	None	S–A	10	No limit.
300	Prone	B	Sandbag or bipod.	S–A	10	Do.

TABLE II

Range	Position	Target	Rest	Kind of fire	Shots	Time
200	Sitting or kneeling.	D	None	S–A	5	No limit.
200	do	D	do	S–A	[1] 20	40 seconds.
300	Prone	D	Sandbag or bipod.	S–A	5	No limit.
300	do	D	do	S–A	[1] 20	45 seconds.

[1] Two magazines of 10 shots each.

TABLE III.—*To be fired twice*

Range	Position	Target	Rest	Kind of fire	Shots	Time
200	Sitting or kneeling.	D	None	S–A	[1] 40	1 minute, 10 seconds.
300	Prone	D	Sandbag or bipod.	S–A	[1] 40	1 minute, 20 seconds.

[1] Two magazines of 20 shots each.

b. Record practice.

TABLE IV

Range	Position	Target	Rest	Kind of fire	Shots	Time
200	Sitting or kneeling.	B	None	S–A	10	No limit.
300	Prone	B	Sandbag or bipod.	S–A	10	Do.

TABLE V

Range	Position	Target	Rest	Kind of fire	Shots	Time
200	Sitting or kneeling.	D	None	S-A	[1] 40	1 minute, 10 seconds.
300	Prone	D	Sandbag or bipod.	S-A	[1] 40	1 minute, 20 seconds.

[1] Two magazines of 20 shots each.

341. *Course C.—a. Instruction practice.*

TABLE I.—*To be fired twice*

Range	Position	Target	Rest	Kind of fire	Shots	Time
200	Prone	B	Sandbag or bipod.	S-A	10	No limit.
200	Sitting or kneeling.	B	None	S-A	10	Do.

TABLE II.—*To be fired twice*

Range	Position	Target	Rest	Kind of fire	Shots	Time
200	Prone	D	Sandbag or bipod.	S-A	[1] 40	1 minute, 10 seconds.
200	Sitting or kneeling.	D	None	S-A	[1] 40	Do.

[1] Two magazines of 20 shots each.

b. Record practice.—Tables I and II will each be fired once for record.

342. *Assault fire.*

Range	Position	Kind of fire	Shots	Time
100	Assault fire	S–A	5	No limit.
100–25	Assault fire (advancing)	S–A	[1] 20	1 minute.

[1] Two magazines of 10 shots each.

343. *Antiaircraft fire.*

Range	Position	Kind of fire	Shots	Time
300	From pit, ground rest height shoulder	Automatic	[1] 80	No limit.
300	do	S–A	[1] 80	Do.

[1] Magazines loaded with every fifth round a tracer bullet.

344. *Qualification.*—The following table shows the minimum aggregate scores required for qualification:

Course	Expert automatic rifleman	Automatic rifle sharpshooter	Automatic rifle marksman	Unqualified
A	500	440	375	Below 375.
B	420	370	315	Below 315.
C		400	335	Below 335.

Section VI

RECORDS AND REPORTS

345. *Records.*—*a.* The following records are kept under the direction of the company commander:

(1) Record of each automatic rifle.
(2) Training record of each member of the command.
(3) Individual automatic rifle score books.
(4) Scores of record practice with the automatic rifle.

b. Record of each automatic rifle.—Each company or similar organization armed with the automatic rifle will keep a record,

under the direction of the company commander, of each automatic rifle, which record will show the number of the rifle, date received, number of rounds fired, stoppages, repairs, inspections, and name of soldier to whom issued.

c. Training record.—Training records will be kept by the squad and platoon leaders under supervision of the company commander, which show the stages of automatic rifle training through which each member of the command has passed, and his proficiency therein. (Pl. 5.)

d. Individual automatic rifle score books.—Individual score books will be kept by all who fire on the known distance ranges prescribed herein. Each round fired during known distance instruction practice and record practice will be recorded in these score books.

e. Scores of record practice with the automatic rifle.—(1) The company record of automatic rifle marksmanship consists of the original score cards kept at the firing point during record practice. These score cards will be retained with the company records for one year, when they will be disposed of in accordance with regulations. The score in record practice and the qualification of each enlisted man will be transcribed to his service record under the supervision of the company commander.

(2) Until the provisions of paragraph 347 have been complied with and the scores transcribed to service records, the company record of automatic rifle marksmanship will be kept in the possession of the company commander.

(3) The record of any officer attached to a company for practice will be duly attested and transmitted to the officer.

(4) The records of an enlisted man attached to a company for practice will be similarly attested and transmitted to the officer charged with the custody of the soldier's service record.

346. *Reports.*—The following reports of automatic rifle record firing will be submitted to the proper headquarters on the forms prescribed as early as practicable after the completion of record firing:

a. Report of individual classification in automatic rifle firing.

b. Consolidated regimental report of classification in automatic rifle firing.

347. *Preparation, examination, and forwarding of reports.*—The provisions of rifle marksmanship, covering the preparation, examination, and forwarding of reports, apply also to reports of automatic rifle record firing.

RECORD OF AUTOMATIC RIFLE INSTRUCTION

Company_____ Platoon_____ Squad_____ Date_____

Name	Mechanical course														Marksmanship course													
	General data	Regulations, classroom	Stripping and assembling	Remove firing pin and extractor	Nomenclature	Functioning	Spare parts	Loading magazines	Immediate action	Care and adjustment	Points to be observed	Inspections	Final examination	Aiming and sighting exercises	Firing positions	Trigger squeeze	Rapid fire exercises	Sight adjustment	Wind allowances	Score book exercises	Assault fire position	1,000-inch firing	Immediate action firing	Instruction practice	Record practice	Assault fire		

METHOD OF MARKING


Fair.


Good.


Very good.


Excellent


Perfect.

PLATE 5

Section VII

COMBAT USE OF THE AUTOMATIC RIFLE

348. *Care of the automatic rifle in the field.*—*a.* The automatic rifle is so constructed that it will function properly even though dirt and sand have worked into the receiver. These should be removed as soon as possible to prevent their getting into the chamber. To protect the receiver and the chamber from dirt the bolt should always be kept in the forward position and a magazine in the magazine opening.

b. When advances are being made during the fire fight, the automatic-rifle man, before each advance, should lower the magazine, allow the bolt to go forward, and then push the magazine into place. Although this method is slightly slower than rushing with the gun cocked, it will keep the gun in action much longer, since it reduces the probability of dirt getting into the chamber and the magazine.

c. During cessation of fire the automatic-rifle man should take every opportunity to clean and oil the gun thoroughly, paying special attention to the chamber.

d. At every cessation of fire all empty magazines should be reloaded.

349. *Rates of fire in combat.*—*a.* Squad leaders are responsible that the automatic-rifle men fire at rates which are proper under the varying circumstances.

b. The automatic rifle can equal the fire effect of a number of riflemen. For example, if the squad is at a range where the riflemen are firing at a rate of about 7 or 8 shots per minute, the automatic-rifle man can ordinarily fire at a rate of about 30 or 35 shots per minute. As the range decreases, the rate of fire of the automatic rifle can increase to not more than 60 aimed shots per minute.

c. In the assault the automatic-rifle man advances on line with the remainder of the platoon, firing steadily at a rapid rate.

d. The following table shows the maximum effective rates of fire that can be attained by the best men. It is not to be expected that the average well-trained automatic-rifle man can attain these rates.

53235°—27——19

Rates of fire per minute	Range	Kind of fire
60	Up to 500 yards	Semiautomatic without rest.
80	do	Semiautomatic with rest.
20–40	Up to 1,000 yards	Semiautomatic without rest.
40–60	do	Semiautomatic with rest.
80–120	From 150 yards to target in an emergency	

e. In the offensive, because of the difficulty of the ammunition supply, a rate of fire of 10 to 60 shots is ordinarily used at ranges less than 500 yards. Only fire that is effective, shot by shot, should be employed. In the delivery of assault fire, the rate of 40 to 80 shots per minute may be employed.

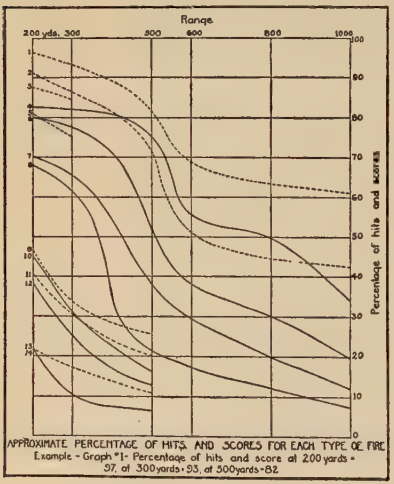


PLATE 6

f. Beyond 500 yards, in order to conserve ammunition for the shorter ranges, a rate of 10 to 12 shots per minute is not generally to be exceeded. In the defensive, when the ammunition supply is more plentiful, the maximum effective fire may be delivered.

g. Plate 6 indicates the efficiency derived from various kinds and rates of fire.

(1) Graphs 1, 2, 3, 5, 9, 11, and 13 were fired by four expert riflemen (dotted lines). Graphs 4, 6, 7, 8, 10, 12, and 14 were fired by eight average shots.

(2) Graphs 1 and 4. 40 shots per minute. Semiautomatic with rest.

Graphs 2 and 6. 60 shots per minute. Semiautomatic with rest.

Graphs 3 and 7. 40 shots per minute. Semiautomatic, no rest.

Graphs 9 and 10. Automatic, bursts of 5 with rest.

Graphs 11 and 12. Automatic, bursts of 10 with rest.

Graphs 13 and 14. Automatic, bursts of 20 with rest.

Graphs 5 and 8. 60 shots per minute. Semiautomatic, no rest.

(3) Ranges are indicated on top and average percentage of hits and scores indicated on right edge. A study of the graphs will show—

(*a*) Semiautomatic fire with rests is the most effective.

(*b*) The semiautomatic fire by the expert rifleman averaging about 15 per cent better than fire by the average rifleman.

(*c*) Automatic fire is relatively inefficient even at such short ranges as 200 yards.

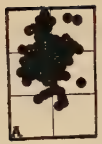
(*d*) An expert automatic rifleman with a rest is able to deliver semiautomatic fire at all ranges at rates of 40 to 60 shots per minute and make an average of from 50 to 75 per cent of hits at all ranges up to 1,000 yards.

(*e*) The decided drop in all graphs between 500 and 600 yards.

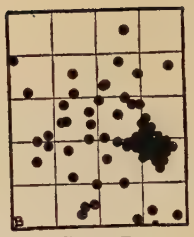
(*f*) Plate 6 is not an absolute standard, but is merely a specific result of firings at The Infantry School. It serves only to indicate the loss of efficiency with increased rates of fire. The graphs as shown in Plate 6 will be found true, regardless of the target used. It should be remembered in studying the graphs that they do not represent the greatest number of shots possible but merely the difference in the efficiency of different rates of fire.

350. *Endurance test of the automatic rifle.*—*a.* The following tests were fired with an automatic rifle, in a machine rest, with a new barrel for each test. The effect of overheating is observed when the shot groups show a considerable enlargement. When keyholing occurs, the gun has almost lost its effectiveness. (Keyholed bullets, instead of revolving around their longer axis, tumble and pass through the target in every conceivable position, usually sidewise.) Keyholing is caused by the enlargement of the overheated barrel and the consequent failure of the lands to give the rotation to the bullet.

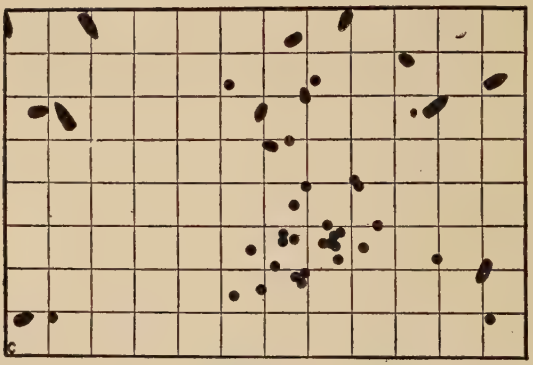
b. In each kind of firing the shot groups were practically of the same size as the various stages of heating were reached.



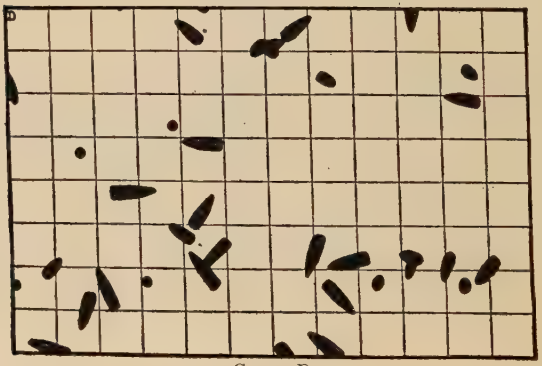
Group A



Group B



Group C



Group D

PLATE 7

c. Plate 7 presents specimen shot groups, selected to illustrate the loss of efficiency as the gun overheats.

(NOTE.—The forearm will catch fire before overheating starts. The gun lost its effectiveness after Group B or overheating started.)

d. The gun was still functioning perfectly after Group D was fired, although the gun had lost its effectiveness after Group B was fired (when overheating started). After Group D was fired the barrels were allowed to cool. They were then fired and gave accurate results. The shot groups were as small as those made when the barrel was first used and there was no change in the distance of the center of impact from the center of the target.

e. The firing indicated in Plate 7 was conducted on a 1,000-inch range. The targets were 8 by 12 mils and were changed each minute without interruption to the fire. A rate of 60 shots per minute, semiautomatic fire, was maintained in the specimen shot groups used in this plate.

f. Explanation of groups.

(1) *Group A:* First minute of firing, 60 hits; size of shot group, 2 by 3 mils.

(2) *Group B:* Twelfth minute of firing, 60 hits; size of shot group, 4 by 5 mils (overheating starting after 720 rounds).

(3) *Group C:* Fifteenth minute of firing, 42 hits. Keyholing starting. The gun started to lose effectiveness after the twelfth minute.

(4) *Group D:* Firing was stopped after this group, in which practically all shots were keyholing. Seventeenth minute.

g. The following table is only approximate and the limits will vary under different weather conditions. It is observed that at the rate of 40 shots per minute the gun did not become hot enough to cause keyholing. At the end of 22 minutes the gun was functioning perfectly and the groups were approximately the same size as after 800 rounds. This table is not the result of one firing but has been checked by data of all firing for 2 years at The Infantry School.

Kind and rate of fire	Overheating begins after—	Keyholing begins after—
Semiautomatic, 40 per minute	800 rounds	
Semiautomatic, 60 per minute	720 rounds	900 rounds.
Automatic, bursts of 5	600 rounds	840 rounds.
Automatic, bursts of 10	480 rounds	720 rounds.
Automatic, bursts of 20	360 rounds	560 rounds.

h. The following rates per minute were obtained by the firing and may be taken as standard. The rates per minute in automatic fire will vary according to the skill in changing magazines:

(1) Semiautomatic fire: 40 to 60 rounds per minute.

(2) Automatic, burst of 5: About 100 rounds per minute.

(3) Automatic, burst of 10: About 120 rounds per minute.

(4) Automatic, bursts of 20: About 140 to 160 rounds per minute.

351. *Automatic fire.—a.* Automatic fire is delivered in bursts of from 3 to 5 shots with one squeeze of the trigger for each burst, without reaiming between shots. Use of automatic fire is exceptional, since it is inaccurate even at close ranges, hard on the rifle, due to the excessive heat and vibration, and a waste of ammunition. Its only advantage is the effect on the morale of friendly troops and that of the enemy.

b. The dispersion of the Browning automatic rifle when fired automatically in bursts varies vertically from 8 to 10 mils and horizontally from 12 to 15 mils. These figures are dependent upon the length of the bursts fired and the steadiness of the holding.

352. *Semiautomatic fire.—a.* Semiautomatic fire is delivered at the rate of one shot for each squeeze of the trigger, each shot being an aimed shot. This kind of fire includes nearly all fire delivered by the automatic rifle. It is more accurate, consumes less ammunition, and is easier on the rifle than automatic fire. A well-trained automatic rifleman can, if necessary, deliver practically the same volume of fire with semiautomatic as with automatic fire. However, the rate of 40 to 60 rounds per minute is considered the best. One hundred and ten aimed shots in 1 minute semiautomatic fire and 160 unaimed shots (assault fire) semiautomatic have been attained with 20-round magazines, but are not to be considered except for use in emergencies and for a very short time.

b. The dispersion of the Browning automatic rifle fired semiautomatically (single shots) is practically the same as that of the rifle. When fired automatically (in bursts) the vertical dispersion is from two to four times, and the horizontal dispersion from five to seven times, that of the rifle.

353. *Fire characteristics.—a. Enumeration.*—(1) The automatic rifle is capable of the rapid production of a large volume of fire.

(2) It is able to deliver fire from any of the positions ordinarily used by the rifleman.

(3) It has practically the mobility, visibility, and vulnerability of one service rifle, together with the fire power of several.

(4) Its cone of fire is deep and narrow when fired semiautomatically.

(5) Its fire is easily controlled and directed.

(6) Due to the lack of a stable mount it is not suitable for overhead fire or indirect laying.

(7) It is not capable of sustaining fire as long as the machine gun.

(8) It is liable to accidental cessation of fire.

(9) It can act only by means of fire power.

b. Deductions.—(1) The fire of the automatic rifle will equal the fire of several rifles for all ordinary firing. For fire on special targets, such as at a dense target or enfilade fire, its fire will be as effective as a much greater number of rifles. Because of this the automatic rifle is the most valuable fire weapon in the squad. It is accordingly necessary to have all men of the squad thoroughly trained in its use, so that it can be kept in action as long as possible.

(2) No emplacements are necessary and firing positions can be changed as often as necessary.

(3) It makes a very indistinct target, hard to locate and harder yet to hit. If semiautomatic fire is habitually employed, the location of the automatic rifle will not be revealed by the noise of the firing. Because of its mobility, it can accompany the squad at all times.

(4) Because of the nature of its cone of fire, flank fire upon a linear target is always desirable.

(5) Its fire can be shifted in any direction with a minimum loss of time. It is fired by one man and consequently is much more easily controlled than several rifles in the hands of several men.

(6) Because of its unfitness for overhead fire and indirect laying, automatic rifles should not be assigned to such work.

(7) Since the automatic rifle is not able to deliver sustained fire, training will insure that its volume of fire is no more than the target presented may require.

(8) The men in the squad should be fully trained to reduce stoppages and to keep the gun in action as long as possible.

354. *Employment.*—*a. Position.*—The automatic rifle is an integral part of the squad equipment and its place is with the squad. In rushes it advances with the squad. In one-man rushes, or infiltration, where a firing line is being built on

the line of scouts, the automatic rifleman is the first man to join the scouts.

b. Tactics.—Being an integral part of the squad the tactics of the squad are the tactics of the automatic rifle. However, there are certain times when the automatic rifle may be used to good advantage on some special mission, allowing the remainder of the squad to concentrate on other work. The above must not be construed to mean that the automatic rifle is separated from the squad—it is merely easier to control and shift the fire of one man than of several. The following list covers some of the special duties in which the automatic rifle may be of great value:

(1) Engaging enemy machine guns or automatic rifles.
(2) Dealing with attacks from the flanks.
(3) Building up a firing line.
(4) Being pushed forward to deliver flank fire or to deal with menacing enemy agents.
(5) Covering the advance of the rest of the squad.
(6) Holding narrow defiles or from any narrow frontage from which it is necessary to deliver a large volume of fire.
(7) Covering dead ground in bands of machine-gun fire.
(8) Accompanying small patrols.
(9) Strengthening outguards and detached posts.

c. Coordination.—The automatic rifle is an integral part of the squad and its employment is governed according to the requirements of the squad. To separate a group of automatic rifles from their squads for segregated employment is rarely permitted.

d. Detailed employment.—Detailed instructions for the employment of the automatic rifle in combat are given in The Rifle Squad, Volume II, of this Manual.

Section VIII

ADVICE TO OFFICERS IN CHARGE OF AUTOMATIC-RIFLE INSTRUCTION

355. *Provisions not mandatory.*—The provisions of this section are not mandatory but are given as a guide.

356. *Preparation of schedules.*—*a.* The preparation of a schedule for a course of automatic rifle instruction involves consideration of certain elements—

(1) Time available.
(2) Size of class.
(3) Number of trained assistants.

(4) Facilities—quantity of equipment, number of firing points available, weather probabilities.

(5) Extent of course—whether or not it is to include record firing of Course A or less.

b. In the schedule of instruction given below it is assumed that—

(1) It is desired to fire Course A for record.

(2) Trained assistant instructors are available in the ratio of one to each eight men firing the course.

(3) Automatic rifles, accessories, and training apparatus are available in the ratio of one per four men.

(4) Suitable classrooms and training areas are available.

(5) Firing points are available in the ratio of one per four men.

(6) The class firing does not furnish pit details.

(7) No time is lost on account of rain, details, etc.

c. It will be noticed that the course has two natural divisions: The first covering such instruction as necessarily precedes any known distance range practice; the second being the known distance range practice itself. The relative amount of time to be given each part of the first division is expressed as a per cent of the whole time allowed for the first division; also in number of hours of an ideal allowance under ideal conditions of 28 hours. The second division, known distance range practice, Course A, should receive at least 70 hours actually on the range.

d. Schedule.

	Hours	Percentage
(1) Instruction and outline of course, organization	1	3.5
(2) Stripping and assembling, field and general data	4	14.0
(3) Stripping and assembling of trigger mechanism	2	7.0
(4) Miscellaneous lesson	1	3.5
(5) Functioning	3	11.0
(6) Stoppages and immediate action	3	11.0
(7) Care, preservation, and cleaning	1	3.5
(8) Points B, D, A	1	3.5
(9) Preparatory range practice	5	18.0
(10) Immediate action firing and 1,000-inch range practice	7	25.0
Total	28	100.0
(11) Known distance range practice	70	

357. *Methods of instruction for mechanical training.—a. When trained assistant instructors are available.*—The following method of instruction is suggested when trained assistant instructors are available:

(1) Commissioned instructor in charge.
(2) Assistant instructor with each group.
(3) Instructor makes brief talk leading to particular subject.
(4) Instructor explains work, imitated by assistant instructor.
(5) Each member of group imitates.
(6) Other members of group check the one doing the work.
(7) Assistant instructors supervise.

b. When trained assistant instructors are not available.—When the instructor in charge is unable to obtain trained assistant instructors, the following method is suggested:

(1) Commissioned instructor in charge.
(2) Instructor makes brief talk leading to particular subject.
(3) Instructor demonstrates and explains work.
(4) Instructor demonstrates work with one member of each group imitating him.
(5) Each member of group imitates.
(6) Other members of group check the one doing the work.

358. *Mechanical training.*—The object of mechanical training is as stated in paragraph 278. Too much stress should not be laid upon minutiae during instruction in the mechanics of the weapon. The object should be always borne in mind.

359. *Preparatory range training.*—Any tendency to slight this phase of instruction should be carefully avoided. This is an important phase in automatic rifle marksmanship instruction. Section III includes only such exercises as are deemed essential, taking into consideration the fact that the soldier has previously had a thorough course in rifle marksmanship.

360. *1,000-inch range practice.—a.* A soldier who commences firing with the automatic rifle without the necessary preliminary instruction is almost certain to be a poor shot. Therefore the provisions of paragraph 308 should be insisted upon. That paragraph provides that no soldier will fire the 1,000-inch course without previously having completed—

(1) A thorough course in rifle marksmanship,
(2) Mechanical training, and
(3) Preparatory range practice.

b. Range.—A 1,000-inch range can easily be constructed in any locality where there is a level, open space, and where a bank or other obstruction forms an efficient bullet stop. It will

usually be found most convenient to place this range on the flank of the "A" range, to be used when the latter is not in use. The "A" range can also be used by placing a line of targets 1,000 inches in front of any firing point. It is only necessary to have a row of firing points, the number depending upon the number of men to fire; a sandbag at each firing point; and a line of targets 1,000 inches from the line established by the muzzles of the rifles while firing. The targets can be supported on beams, frames, or in any manner securely upright and facing the firing line.

c. Preparation of "immediate action" magazines.—(1) The loading of the magazines to be used in the immediate action table (par. 337) should be supervised by the instructor or one of his assistants. The order in which the stoppages are set up should be varied, in order that the knowledge of the soldier may be utilized and that he be given as much instruction as possible in reducing the stoppages which usually occur. In loading the magazines, three cartridges should follow each separated case and filed-rim stoppage; two good cartridges should follow each range dummy; and one good cartridge should follow all other stoppages.

(2) The following is a suggested method of loading an "immediate action" magazine (from top to bottom):

1 good cartridge.
1 cartridge bulged near base.
1 good cartridge.
1 cartridge, for separated case.
3 good cartridges.
1 range dummy.
2 good cartridges.
1 cartridge with filed rim.
3 good cartridges.
1 cartridge, bulged near shoulder.
1 good cartridge
1 cartridge, for separated case.
3 good cartridges.

(3) *Preparing cartridges to cause stoppages.*

(*a*) *Separated cases.*—With a file, cut a ring around the cartridge case about ½ inch from the base, filing about halfway through the case. When the cartridge is fired, this willl cause the case to separate, the lower portion being withdrawn by the extractor and the upper portion remaining in the chamber.

(*b*) *Bulged cartridge.*—With a pair of pliers, deform the cartridge case near the base or the shoulder. This will bulge the cartridge to simulate those deformed by loading machines.

(*c*) *Filed rim.*—File the rim of a cartridge until half of it has been removed. This will cause failure to extract. It is important that no more than half of the rim be removed, otherwise the feed rib on the bolt will not engage sufficiently to feed the cartridge into the chamber.

361. *Known-distance practice.*—It is essential that no soldier commence known-distance practice until he has completed the course of 1,000-inch firing.

PISTOL, DISMOUNTED

(T. R. 150–20)

		Paragraphs
SECTION I.	General provisions	362
II.	Safety precautions	369
III.	General scheme	374
IV.	First step—Aiming	378
V.	Second step—Position	386
VI.	Third step—Trigger squeeze	391
VII.	Fourth step—Rapid fire	394
VIII.	Fifth step—Quick fire	396
IX.	Sixth step—Examination on preparatory instruction	398
X.	Gallery practice	399
XI.	Coaching methods and organization	404
XII.	General provisions for range firing	413
XIII.	Instruction practice	418
XIV.	Record practice	422
XV.	Classification, compensation, and insignia	426
XVI.	Records and reports	431
XVII.	Targets	434
XVIII.	Pistol competitions	438

SECTION I

GENERAL PROVISIONS

362. *General.—a. Purpose.*—Instruction in pistol marksmanship is divided into two distinct courses, dismounted and mounted. The dismounted course applies to all units armed with the pistol, the mounted course to Cavalry only. The purpose of these regulations is to present the essentials of dismounted pistol marksmanship in clearly defined, successive steps, which, if followed in proper sequence, will develop a uniformly high standard of training.

b. Definitions.—There are four classes of fire which may be employed with the pistol. They are:

(1) *Quick fire.*—A class of fire employed when the bobbing targets are used.

(2) *Rapid fire.*—A class of fire in which a time limit is set for completing a score.

(3) *Slow fire.*—A class of fire in which no time limit is set for completing a score.

(4) *Time fire.*—A class of fire, applying to competitions only, which provides a time limit for completing a score, the time limit being much more liberal than in rapid fire.

c. Use of term.—Wherever the term "officer" is used throughout these regulations it will be interpreted to mean either a commissioned officer or a warrant officer except where manifestly inapplicable.

363. *Care and cleaning of the pistol.*—Instruction in care and cleaning are prescribed in Section III, page 119.

364. *Period of instruction.*—The calendar year is the target year. Commanding officers will so order instruction and practice in marksmanship as to insure not only thorough training but the maintenance of constant efficiency in pistol firing throughout their commands. These conditions will be obtained by means of instruction distributed throughout the year and by firing the prescribed courses in the regular and supplementary seasons.

365. *Target seasons.*—The regular and supplementary target seasons will be designated by local commanding officers and will coincide as nearly as possible with the corresponding rifle seasons. All men who are required to fire and who have not fired record practice during the current target year will fire during the supplementary season.

367. *Record practice.*—For any individual record practice for qualification will be held but once annually. Although record practice is customarily held during the regular or supplementary seasons, local commanding officers may prescribe such practice whenever circumstanes make it advisable.

368. *Who will fire.—a.* All officers armed with the pistol and on duty with troops and with less than 15 years' service, commissioned, or commissioned and enlisted, and all enlisted men armed with the pistol are required to fire the dismounted pistol course, with the exceptions noted below:

(1) Those bandsmen, cooks, and wagoners of all units in which the pistol is not the principal arm, *who do not elect to fire the dismounted course*, fire such part of the dismounted

course as may be prescribed by the unit commander in accordance with special ammunition allowances as prescribed annually by the Militia Bureau.

NOTE.—The firing prescribed by unit commanders for the personnel mentioned in this subparagraph is not intended for qualification or requalification, but to maintain proficiency with the pistol.

(2) The following are authorized but not required to fire:

(*a*) Officers with over 15 years' service and officers not on duty with troops.

(*b*) Enlisted men of grades 1 and 3; enlisted men of grade 2, except first sergeants; enlisted personnel of mine-planter detachments; and an enlisted man who has qualified during his current enlistment as a pistol marksman, dismounted, or as a pistol sharpshooter, dismounted.

NOTE.—An enlisted man in units in which the pistol is not the principal arm, who has qualified during his current enlistment as an expert pistol shot will not be permitted to fire again during that enlistment. Those enlisted men who attain a qualification of marksman or better are authorized to wear for the remainder of their enlistment, or until the completion of a subsequent record course, the badge of the last qualification attained.

(*c*) Infantry, exclusive of personnel mentioned in 1 above.

(*d*) *Quartermaster corps.*—All enlisted personnel, exclusive of personnel mentioned in 1 above, except of organizations in which the pistol is the principal arm.

b. Personnel who are authorized or required to fire and who are not on duty with a company or similar organization will, if they fire, be attached to some organization for practice, or otherwise be provided for by their regimental, separate battalion, or station commander, who will be responsible for their classification and the reports connected therewith.

c. Upon the recommendation of the surgeon, the post commander may excuse officers and enlisted men from dismounted pistol practice.

d. The corps area or department commander (or for a special service school, the appropriate chief of branch) is authorized to excuse any individual or unit from the required pistol practice or to direct that they fire a shorter course than that herein required, but no individual who fires a course different from the one herein prescribed will be classified.

e. Recruits joining too late to permit thorough preparatory training before firing should be excused by the corps area or department commander. However, under ordinary circumstances, any recruit who joins four weeks before the end of the regular practice period of an organization can be thoroughly instructed in pistol marksmanship and will be required to fire the course.

SECTION II

SAFETY PRECAUTIONS

369. *Rules for safety.*—*a.* Before ball ammunition is issued, the soldier must know the essential rules for safety with the pistol. The following rules will be taught as soon as the recruit is sufficiently familiar with the pistol to understand them. They should be enforced by constant repetition and coaching until their observance becomes the soldier's fixed habit when handling the pistol. When units carrying the pistol are first formed, the officer or noncommissioned officer in charge will cause the men to execute *inspection pistol.*

b. Execute *unload* every time the pistol is picked up *for any purpose.* Never trust your memory. Consider every pistol as loaded until *you* have proved it otherwise.

c. Always unload the pistol if it is to be left where some one else may handle it.

d. Always point the pistol *up* when snapping it after examination. Keep the hammer fully down when the pistol is not loaded.

e. Never place the finger within the trigger guard until you intend to fire or to snap for practice.

f. Never point the pistol at anyone you do not intend to shoot, nor in a direction where an accidental discharge may do harm. On the range do not snap for practice while standing back of the firing line.

g. Before loading the pistol, draw back the slide and look through the bore to see that it is free from obstruction.

h. On the range, do not insert a loaded magazine until the time for firing.

i. Never turn around at the firing point while you hold a loaded pistol in your hand because, by so doing, you may point it at the man firing alongside of you.

j. On the range do not load the pistol with a cartridge in the chamber until immediate use is anticipated. If there is

any delay, lock the pistol and only unlock it while extending the arm to fire. Do not lower the hammer on a loaded cartridge; the pistol is much safer cocked and locked.

k. In reducing a jam *first remove the magazine.*

l. To remove a cartridge not fired *first remove the magazine* and then extract the cartridge from the chamber by drawing back the slide.

m. In campaign, when early use of the pistol is not foreseen, it should be carried with a fully loaded magazine in the socket, chamber empty, hammer down. When early use of the pistol is probable, it should be carried loaded and locked in the holster or hand. Extra magazines should, in campaign, be carried fully loaded.

n. When the pistol is carried in the holster loaded, cocked, and locked, the butt should be rotated away from the body when drawing the pistol in order to avoid displacing the safety lock.

o. Safety devices should be frequently tested. A safety device is a danger device if it does not work when expected.

370. *Test of safety lock.*—Cock the hammer and then press the safety lock upward into the safe position. Grasp the stock so that the grip safety is depressed and squeeze the trigger three or four times. If the hammer falls, the safety lock is not safe and must be repaired.

371. *Test of grip safety.*—Cock the hammer and, being careful not to depress the grip safety, squeeze the trigger three or four times. If the hammer falls, the grip safety is not safe and must be repaired.

372. *Test of half-cock notch.*—Draw back the hammer until the sear engages the half-cock notch and squeeze the trigger. If the hammer falls, the hammer or sear must be replaced or repaired. Draw the hammer back nearly to full cock and then let it slip. It should fall only to half cock.

373. *Test of disconnector.*—Shove the slide one-quarter inch to the rear; hold slide in that position and squeeze the trigger. Let the slide go forward, *maintaining* the pressure on the trigger. If the hammer falls, the disconnector is worn on top and must be replaced. Pull the slide all the way to the rear and engage the slide stop. Squeeze the trigger and at the same time release the slide. The hammer should not fall. Release the pressure on the trigger and then squeeze it. The hammer should then fall. The disconnector prevents the re-

lease of the hammer unless the slide and barrel are in the forward position safely interlocked. It also prevents more than one shot following each squeeze of the trigger.

SECTION III

GENERAL SCHEME

374. *Relative value of instruction and practice.—a.* Pistol firing is a purely mechanical operation that any man who is physically and mentally fit to be a soldier can learn to do well if properly instructed. The methods of instruction must be the same as are used in teaching any mechanical operation. The soldier must be taught the various steps in their proper order and must be carefully watched and corrected whenever he makes a mistake.

b. Good shooting is more the result of careful instruction than of mere practice. Unless properly instructed, men instinctively do the wrong thing in firing the pistol. They instinctively jerk the trigger, which is the cause of flinching. Hence, mere practice fixes the instinctive bad habits.

c. If, however, a man has been first thoroughly instructed in the mechanism of correct shooting and is then carefully and properly coached when he begins firing, correct shooting habits rapidly become fixed.

d. The ultimate object of the training is to develop the ability to fire one or more accurate shots quickly, but training must begin with carefully coached slow fire to attain accuracy and be followed by practice that will gradually shorten the time without sacrificing the accuracy.

375. *Methods of instruction.—a.* Pistol instruction is divided into two phases: Preparatory instruction and range firing. In the preparatory instruction the soldier learns practically all the principles of good shooting. In range firing he cultivates the will power to apply these principles when using ball ammunition until proper fixed habits have been acquired.

b. The principles of good shooting are simple and easy to learn except the trigger squeeze, which is difficult to apply to a loaded pistol. To this important item most of the instructor's time will be devoted during the period of range practice.

c. There are six distinct steps in the preparatory instruction:

(1) Aiming exercises.

(2) Position exercises.

(3) Trigger-squeeze exercises.
(4) Rapid-fire exercises.
(5) Quick-fire exercises.
(6) Examination on preparatory work.

d. The steps are progressive and must always be taught in proper sequence.

e. Each of the first five steps begins with a talk by the instructor and a demonstration by a squad which the instructor puts through the exercises that are to constitute the day's work. He shows how the corporal organizes the work in the squad so that no men are idle and how pairs coach each other when they are not under instruction by an officer or a noncommissioned officer. He shows exactly how to execute each of the exercises about to be taken up and explains its purpose and application in pistol shooting.

f. The instructor who gives these very essential talks and demonstrations may be the organization commander, or he may be a specially qualified officer who has been detailed as battalion or regimental instructor. But the actual application of the demonstrated exercises to the men of the command must be by the officers and noncommissioned officers of the organization undergoing instruction.

g. Instruction must be thorough and must be individual. General instruction of groups of men is not enough. The instructors must see that each man understands each and every point and can explain it in his own words.

h. In peace-time training and in war, when time is available for a complete course of instruction and practice, the blank form shown in paragraph 385 (explained in the first talk) must be kept by each squad leader and by each platoon leader independently. This blank form shows at a glance just how much each man knows about each feature of training and permits concentration of instruction where most needed.

i. Interest and enthusiasm must be sustained and everything possible should be done to stimulate them. If the exercises are carried out in a manner approximately correct and as a routine piece of work, results will be very disappointing. The method of instruction in the essential points is shown in the questions and answers under the heading *Examination on preparatory instruction* (Section IX). This section should be consulted frequently by the instructor during the preliminary instruction and each man must be put through a thorough test along the lines indicated before he is allowed to fire a shot.

j. It is of utmost importance that the trigger squeeze be explained in such a manner as to give the soldier a clear understanding of how it should be executed.

k. All authorities on shooting agree that the trigger must be squeezed with a steady increase of pressure. If a man knows when his pistol will go off it is because he *suddenly* gives the trigger all the pressure necessary. Conversely, if the increase of pressure is steady the man can not know when the pistol will be discharged. Hence, he is instructed to *squeeze the trigger in such a way as not to know just when the hammer will fall.* This does not mean that the process is necessarily a slow one and that it will take a comparatively long time to fire a shot. A man, *through training,* can reduce the time used in pressing the trigger to as brief a period as one second and still press it in such a manner that he does not know just what part of the second the discharge will take place. When the soldier has acquired the ability to squeeze the trigger properly, even though it be very slowly, he soon learns to shorten the time without changing the process.

l. Whenever a man is in a firing position, whether it be at preparatory instruction or during range firing, he must have a coach beside him to watch him and point out his errors.

m. None of the preparatory exercises are executed by command or in unison by a group of men. Instruction is at all times individual. The men are placed in pairs and alternate in coaching each other. This method gives each man the necessary physical rest without halting the progress of his instruction. He is learning while watching another man and attempting to correct his mistakes.

n. A great deal of preparatory practice is necessary in order to strengthen the muscles of the hand and arm and to fix the habit of correct trigger squeeze. The periods of exercise should not ordinarily be of long duration. Three or four 10-minute periods per day for a month will produce good results on the range. These periods of instruction can often be held during waits when troops are on maneuvers or field exercises. Some kind of a mark can always be found that will serve as an aiming point.

o. It is a good plan to have full-size pistol targets placed in the vicinity of the barracks to encourage the men to spend part of their time in preparatory practice.

p. The preparatory exercises should be held out of doors, using full-sized pistol targets, but during inclement weather they can be held indoors, using miniature targets, with good results.

376. *All men to take preparatory instruction.—a.* Every man who is to fire on the range should be put through the preparatory course. Part of the preparatory instruction may have escaped the men the previous year and part of it has certainly been forgotten; in any case it will be beneficial to go over it anew and refresh the mind on the subject.

b. In peace time noncommissioned officers should be put through a rigid test before the period of preparatory instruction for the organization begins. This is also desirable in war time when time is available.

377. *Examination of pistols.*—Each man's pistol will be closely examined for defects before the beginning of the preparatory instruction.

SECTION IV

FIRST STEP—AIMING

378. *Apparatus required.*—The apparatus required for a set of equipment is listed below. When an entire squad is engaged in this work there should be two sets of this equipment in order that a number of the men do not remain idle. The work of the squad can then be carried on as in rifle marksmanship.

One sighting bar.
One pistol rest.
Two small aiming disks.
One 5-inch aiming disk.
Two small boxes, with paper tacked on one side.
One piece of paper at least 2 feet square and tacked on a wall or frame.

NOTE.—Men who have once been instructed in the aiming exercises, either in preparation for rifle or for pistol firing, will require very little instruction in aiming during subsequent seasons. They will, however, go through the aiming exercises at least once to verify their knowledge of this subject and to assign them a mark in the proper column on the blank form shown in paragraph 385.

379. *The sighting bar.—a. The sighting bar* is described in paragraph 204. References there to the peep sight should be disregarded.

b. Carefully blacken all pieces of tin or cardboard and the top of the bar. Nail the bar to a box about 1 foot high and place the box on the ground, table, or other suitable place.

c. The sighting bar is used in instruction for two reasons: First, the sights are larger than on the pistol and errors in aiming can be more easily seen and pointed out to the beginner; second, the eyepiece of the sighting bar forces the man under instruction to place his eye so that he sees the sights in proper alignment and thus he learns how to align the sights of the pistol properly. Without an eyepiece the instructor can not know whether or not the recruit has his eye in proper position.

380. *The pistol rest.—a.* To construct a sighting rest for the pistol (fig. 2), take a piece of wood about 10 inches long, 1¼ inches wide, and $\frac{9}{16}$ inch thick. Shape one end so that it will fit snugly in the handle of the pistol when the magazine has been removed. Screw or nail this stick to the top of a post or other object at such an angle that the pistol when placed on the stick will have its barrel approximately horizontal. A suitable sighting rest for the revolver may also be easily improved by cutting an additional notch, to hold the pistol, in one end of the box used as a rifle rest.

b. Having first learned the principles of aiming by means of the sighting bar, the soldier is taught to apply them to the pistol on its rest.

381. *Aiming disks.—a.* For each sighting bar and each pistol rest a small disk (3 inches in diameter) is made of white cardboard or of tin with white paper pasted on it and with a small bull's-eye in the center. In the exact center of the bull's-eye is a small hole just large enough to admit the point of a pencil. For indoor or close-range work the bull's-eye should not be larger than a 50-cent piece.

b. There should be one 5-inch aiming disk for each squad for triangle exercise at 50 yards. The large disk should be of tin, painted black, with a handle 4 or 5 feet long and of the same color as the paper on which the triangles are to be made.

382. *First sighting exercise.—a.* The squad leader or instructor shows a sighting bar to his squad or group and points out the front and rear sights, the eyepiece, and the removable target. He explains the use of the sighting bar as follows:

(1) The front and rear sights on the sighting bar represent enlarged pistol sights.

(2) The sighting bar is used in the first sighting exercise because with it small errors can be easily seen and explained to the pupil.

(3) The eyepiece requires the pupil to place his eye in such position that he sees the sights in exactly the same alignment as seen by the coach.

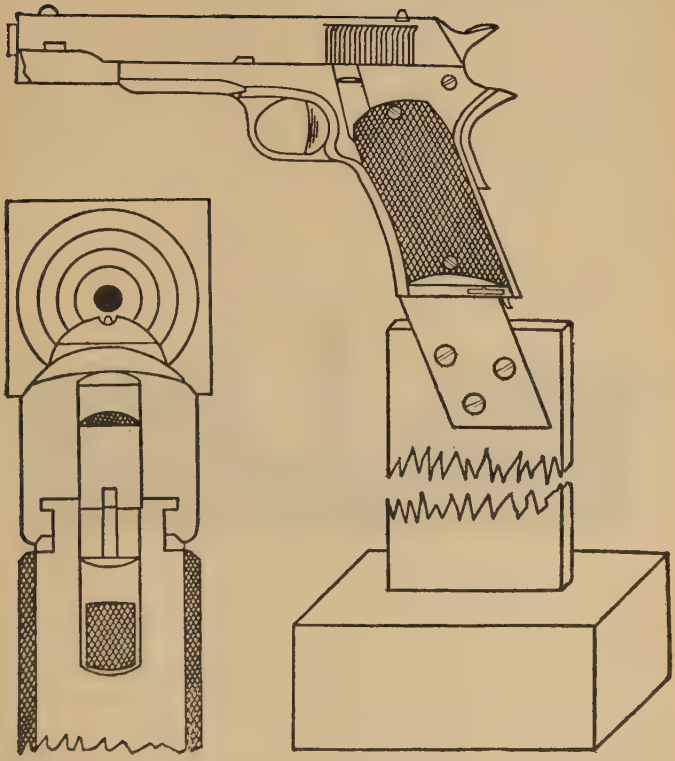


FIG. 2.—The pistol rest

(4) There is no eyepiece on the pistol, but the pupil learns by use of the sighting bar how to align the sights properly when using the pistol.

(5) The removable target attached to the end of the sighting bar is a simple method of readily aligning the sights on a bull's-eye.

b. The instructor explains the open sight to the assembled group, showing each man the illustration of a correct sight alignment. (See fig. 3.)

c. The instructor, using the open sight, adjusts the sights of the sighting bar, with target removed, to illustrate a correct

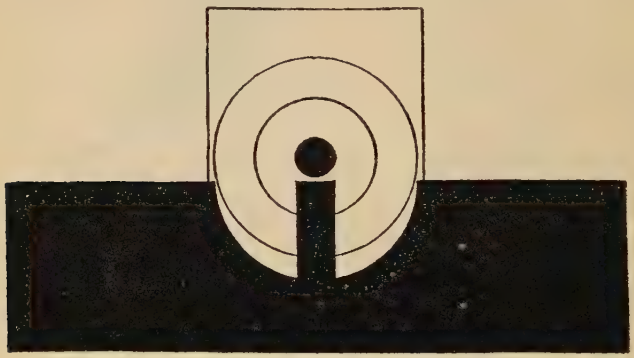


FIG. 3.—Normal open sight

alignment of the sights. He has each man of the assembled group look through the eyepiece at each of the sight adjustments.

d. The instructor adjusts the sights of the sighting bar with various small errors in sight alignment and has each man of the assembled group endeavor to detect the errors.

e. The instructor describes a correct aim, again showing the illustration to each man. (See fig. 3.) He explains that the top of the front sight is seen through the middle of the open sight and is raised to a height so that its top is level with the outside edges of the open sight and just touches the bottom of the bull's-eye, so that all of the bull's-eye can be clearly seen.

f. The instructor explains that the eye should be focused on the bull's-eye in aiming, and he assures himself, by questioning the pupils, that each man understands what is meant by focusing the eye on the bull's-eye.

g. The instructor adjusts the sights of the sighting bar and the removable target so as to illustrate a correct aim and has each man of the group look through the eyepiece to observe this correct aim.

h. The instructor adjusts the sights and the removable target of the sighting bar so as to illustrate various small errors and has each man in the group attempt to detect the error.

i. The exercise described above having been completed by the squad leader or other instructor, the men are placed in pairs and repeat the exercise by the coach and pupil method.

383. *Second sighting exercise.—a.* With the pistol on the pistol rest and the sights pointing at a blank sheet of paper on a board or on the wall, stand with the head in the same relative position as in firing the pistol and look through the sights (fig. 4). Then by signal or by word have the disk moved until the bottom edge of the bull's-eye is in exact alignment with the sights. Then command HOLD and move away from the pistol and let the man undergoing instruction look through the sights to see what is the proper aim.

b. Have the man under instruction look through the sights while he directs the disk to be moved until the sights are aligned on the bottom of the bull's-eye. The instructor then looks through the sights to see if any error has been made.

c. Have the sights adjusted on the bull's-eye with various very slight errors and see if the man under instruction can detect them readily.

384. *Third sighting exercise.—a.* Using the sighting rest for the pistol, require the man under instruction to direct the marker to move the disk until the sights are aimed at the bottom edge of the bull's-eye and to command HOLD. The instructor then looks at the aim, and after noticing whether the aim is right or wrong commands MARK. The marker, without moving the disk, makes a pencil mark on the paper through the hole in the center of the bull's-eye. Repeat the operation until three marks have been made. The instructor looks at the aim each time, but he says nothing to the man until all three marks have been made and joined together so as to make a triangle. The faults, if any, are then pointed out. The size and shape of the triangle will be discussed and the exercise will be

repeated several times. At 30 feet, using the small bull's-eye, the triangle should be small enough to be covered by a dime.

b. This exercise should also be held during the period of the preliminary instruction at 50 yards on a 5-inch movable bull's-eye. The long-range triangle exercise teaches the men to aim

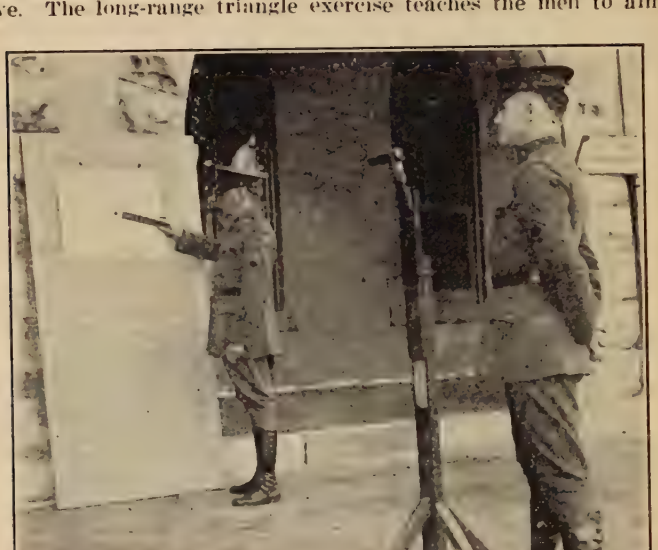


FIG. 4.—Sighting exercise

accurately at the distant bull's-eye, of which the outlines are indistinct, and if the exercise is properly handled helps greatly to sustain interest in the work.

385. *Blank form, preparatory instruction.*—This blank form is used during the period of preparatory instruction. Its

object is to show at all times the state of instruction of each man and to insure his thorough instruction in all necessary points before range practice begins.

Names	Recruit instruction				Pistol marksmanship—dismounted										Remarks	
	Functioning and operation	Safety precautions	Test of safety devices	Care and cleaning	Sighting bar	Exercises with the pistol rest	Holding the breath	Position of the hand	Position exercise	Trigger-squeeze exercise	Instruction in calling the shot	Rapid-fire exercise	Quick-fire exercise	Ability as a coach	Final examination	

Method of marking:



Indicates a little instruction.



Indicates "fair."



Indicates "good."



Indicates "very good."



Indicates "excellent."

Section V

SECOND STEP—POSITION

386. *Essentials of proper position.*—To assume the proper position for firing it is necessary to know: How to aim, how to grasp the pistol, how to hold the breath properly, and the correct position of the body with relation to the target.

387. *How to grasp the pistol.—a.* To take the grip, hold the pistol in the left hand and force the grip safety device down and back into the crotch formed between the thumb and fore-

finger of the right hand. The thumb is carried parallel with or slightly higher than the forefinger; it should never be lower. Close the three lower fingers on the stock firmly but not with a tense grip.

b. The thumb and forefinger squeeze the frame of the pistol, but the ball of the thumb does not always touch the pistol, this depending on the conformation of the man's hand. By this pressure, movement to the right or left is controlled, and the trigger squeeze can be better applied and coordinated.

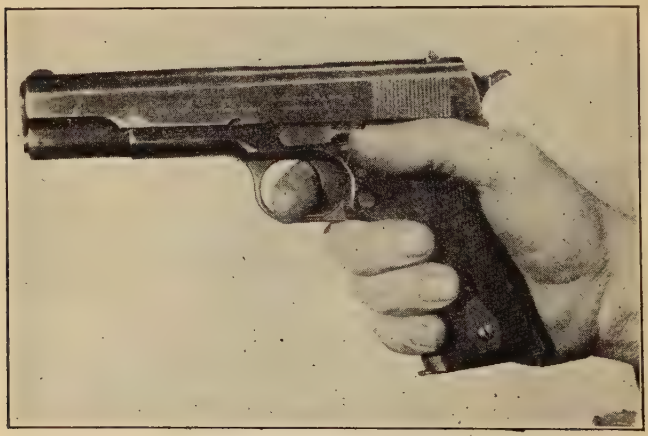


FIG. 5.—How to grasp the pistol

c. The muscles of the arm are firm without being rigid. There should be no bending of the arm at the elbow when the pistol is fired. On the other hand, the arm should not be locked at the elbow. When the firer is shooting properly, after recoil, the pistol arm should automatically carry the pistol back to the position shown in Figure 6.

388. *How to hold the breath.—a.* The proper method of holding the breath is important because many men, without instruction, hold the breath in the wrong way or do not hold it at all.

b. To hold the breath, draw into the lungs a little more air than an ordinary breath, let a little of the air out and stop the rest by closing the throat. Do not hold the breath with the throat open or by the muscular effort of the diaphragm.

389. *Position of the body.*—*a.* The position of the body is a little more than half-faced to the left, the feet 12 or 18 inches apart, depending on the man, the head erect, and the body perfectly balanced when the pistol is held in the shooting position.

b. The whole position should be natural and comfortable. The unnecessary tensing of any of the muscles of the hand, arm, or body will cause tremors and should therefore be avoided.

390. *Position exercise.*—*a.* Required for this exercise: A line of L targets with firing points at 15, 25, and 50 yards, or a line of small aiming bull's-eyes placed at the height of the shoulder.

b. The men, armed with the pistol, are placed in one line at one pace interval. The command: 1. Inspection, 2. PISTOL, is given to verify the fact that all pistols are unloaded.

c. Demonstrate the position of the hand in gripping the stock and describe the grip in detail.

d. Require each man to grip the stock of his pistol in the prescribed manner, using the free hand to grasp the barrel and set the stock well back in the pistol hand between the thumb and the first finger.

e. Describe the correct method of holding the breath while aiming and require each man to practice it a few times.

f. Demonstrate the correct position of the whole body when firing, explaining in detail the position of the feet, legs, body muscles, arms, and head.

g. Require each man to assume the correct firing position. The officers and noncommissioned officers of the organization correct individuals who are at fault.

h. The above exercises having been completed, instruction becomes individual, under a coach. The men are placed in pairs opposite L targets or opposite small aiming bull's-eyes and take turns coaching each other.

i. The details of the position exercises are—

(1) Grasp the stock with the correct grip.

(2) Face target, then face half left.

(3) Separate the feet 12 to 18 inches.

(4) Align the sights on the bottom edge of the bull's-eye, arm extended.

(5) Hold the breath.



FIG. 6.—Position of the body

(6) As soon as the arm becomes tired or the aim becomes unsteady, assume the position of *raise pistol.*

(7) The pistol should be removed from the right hand and the muscle of the hand, arm, and shoulder relaxed and exercised before resuming the grip. This should also be done between shots in slow fire.

j. After the firer has completed the position exercise he may repeat it with a weight, such as a pair of field glasses in a case suspended from the right arm. The weight is suspended, first between shoulder and elbow, then from the forearm, then from the wrist, and finally from the barrel of the pistol, interspersed with short rests. The value of this exercise lies in developing the muscles of the shoulder and arm.

k. (1) The hammer is not raised during the position exercises and the trigger is grasped very lightly with the finger.

(2) After a short rest repeat the exercise.

(3) The man acting as coach watches carefully and corrects all errors.

(4) The man under instruction and the coach change places as the officer in charge of the instruction desires. This should be every three to five minutes.

(5) Only a few hours in all should be devoted to the position exercises, as all of its details are included in the trigger-squeeze exercise.

Section VI

THIRD STEP—TRIGGER SQUEEZE

391. *Importance of correct trigger squeeze.—a.* The recruit can readily learn to aim and hold the aim, either on the bull's-eye or very close to it, for at least 10 seconds. When he has learned to press the trigger in such a manner as not to spoil his hold he becomes a good shot. All men flinch in firing the pistol if they know the exact instant at which the discharge is to take place. This is an involuntary action which can not be controlled. A sudden pressure of the trigger may derange the aim slightly, but the extreme inaccuracy of a shot fired in this way is mainly due to the flinch, i. e., the thrusting forward of the hand to meet the shock of recoil. Any man who holds the sights of the pistol as nearly on the bull's-eye as possible and continues to press on the trigger with a uniformly increasing pressure until the pistol goes off is a *good shot.* Any man who has learned to increase the pressure on the trigger *only* when

the sights are in alignment with the bull's-eye, who holds the pressure when the muzzle swerves, and who continues with the pressure when the sights are again in line with the bull's-eye is an *excellent shot.* Any man who tries to "catch his sights" as they touch the bull's-eye and to set the pistol off at that instant is a *very bad shot.*

b. The apparent unsteadiness of the pistol while being held on the bull's-eye does not cause much variation in the striking place of the bullet, due to the fact that the movement is of the whole extended arm and pistol. But the sudden pressure of the trigger, which always accompanies the flinch, deflects the muzzle of the pistol and causes the bullet to strike far from the mark. In squeezing the trigger the pressure must be *straight* to the rear. There is a tendency on the part of some men to press the trigger also to the left.

392. *Calling the shot.*—To call the shot is to state where the sights were pointed at the instant the hammer fell. Thus: "High"; "a little low"; "to the left"; "slightly to the right"; "bull's-eye"; etc. If the soldier can not call his shot correctly in range practice he did not press the trigger properly and consequently did not know where the sights were pointed when the hammer fell.

393. *Trigger-squeeze exercise.—a. First trigger-squeeze exercise.*—(1) Required for this exercise a line of ⊾ targets with a firing point at 25 yards.

(2) Give the command: 1. Inspection, 2. PISTOL, and verify the fact that all pistols are unloaded.

(3) The squad leader explains to his squad the details of this exercise, which are as follows:

(*a*) Cock and lock the piece.

(*b*) Take the correct grip.

(*c*) Take the correct position.

(*d*) Align the sights on the target and start the squeeze, gradually increasing the pressure on the trigger until all the strength of the hand is employed.

(*e*) Rest the hand.

(*f*) Repeat the above operation with the piece unlocked.

(*g*) Call the shot.

(4) The squad leader assures himself that all the men understand the details of this exercise. The work is then carried on by pairs working together, coach and pupil. Members of the squad should change over frequently to avoid tiring the muscles of the arm. Extended trigger-squeeze exercise is necessary and the periods should be short but frequent.

(5) The duties of the coach are as follows:

(*a*) See that the firer takes the correct grip.

(*b*) See that the firer takes a correct position.

(*c*) Watch the hand of the firer to see that he is gradually increasing the pressure on the trigger.

(*d*) See that the firer rests his shooting hand after having unlocked the piece.

(*e*) See that the firer calls the shot when the exercise is repeated with the piece unlocked.

b. Second trigger-squeeze exercise.—(1) Give the command: 1. Inspection, 2. PISTOL, and verify the fact that all pistols are unloaded.

(2) The squad leader explains to his squad the details of this exercise, which are as follows:

(3) (*a*) Cock the piece, (*b*) take the correct grip, (*c*) take the correct position, (*d*) align the sights on the target and start the squeeze. Close the eyes and continue to squeeze until the hammer falls. (*e*) When the hammer falls, open the eyes and check the aim to see if it has been deranged.

NOTE.—The firer should be able to keep on the target. If he is off persistently he should check on his grip and position to see that they are correct.

(4) The duties of the coach in this exercise are the same as in the first trigger-squeeze exercise.

c. Third trigger-squeeze exercise.—In learning to fire the pistol, the average man has a tendency to push a punch forward with the arm or shoulder to meet the force of recoil of the piece. To assist the firer in overcoming this tendency the following exercise is prescribed:

(1) By command, verify the fact that all pistols are unloaded.

(2) (*a*) The firer cocks and locks the piece, takes his firing position, aligns the sights under the bull's-eye, and squeezes the trigger. (*b*) The coach stands in front of the firer, facing him, and strikes the muzzle of the piece with the palm of his hand. At irregular intervals his hand misses the muzzle. The firer should hold the piece on the target and make no forward punching movement to meet the shock of the blow. If he does push forward with the arm or shoulder it will be apparent when the coach misses the muzzle.

d. Fourth trigger-squeeze exercise.—After the men have been given training in the first three trigger-squeeze exercises the first exercise will be repeated without locking the piece.

Section VII

FOURTH STEP—RAPID FIRE

394. *Training for rapid fire.—a.* Training for rapid fire is taken up after the trigger-squeeze exercise has been practiced sufficiently to be thoroughly understood, but the trigger-squeeze exercise practice in slow fire should be resumed and continued during the entire period of preparatory training.

b. The time consumed in pressing the trigger must necessarily be shorter in rapid fire than in slow fire, but the process is the same.

c. To fire the first shot, the pistol should be brought from the position of *raise pistol* by the shortest route to the aiming position, with the sights aligned on the mark. This is done by a smooth, rapid extension of the right arm straight from the shoulder, inserting the right forefinger in the trigger guard during the movement and holding the breath. To bring the pistol through the arc of a circle to the aiming position is an unnecessary loss of valuable time.

d. For succeeding shots the sights should be held as nearly on the mark as possible and the breath held throughout the score. The recoil after each shot will throw the sights out of alignment, but they should be brought back to the mark immediately by the shortest route. The recoil should cause a vertical movement of the firing arm upward, the hand moving only 6 to 8 inches. There should be no snapping or bending of the wrist or elbow. The sights will then come back automatically on the mark after each shot. To give the pistol a flourish between shots is a useless loss of time.

e. To stimulate the self-loading action of the automatic pistol take a strong cord about 4 feet long and tie one end to the thumb piece of the hammer, *the knot on top.* Take a few turns of the other end of the cord around the thumb or fingers of the left hand. The cord should be long enough to permit the left hand to hang naturally at the side while aiming the pistol with the right hand, right arm fully extended.

f. Each time the hammer falls a quick backward jerk of the left hand recocks the pistol and at the same time jerks the sights out of alignment with the bull's-eye. This derangement of the alignment corresponds very closely to the jump of the pistol when actually firing.

g. If the knot is underneath the hammer or if a very thick cord is used the hammer will not remain cocked when jerked back.

395. *Rapid-fire exercise.—a.* Required for this exercise: A piece of strong cord 4½ feet long for each man; a row of L targets or a row of aiming bull's-eyes.

b. Give the command: 1. Inspection. 2. PISTOL, and verify the fact that all pistols are unloaded.

c. Explain to the assembled command that the trigger squeeze is the same in rapid fire as in slow fire.

d. Demonstrate the correct method of bringing the pistol by the shortest route to the aiming position. Show how this is done both from *raise pistol* and in drawing the pistol from the holster in an emergency.

e. Show how to tie the cord to the thumb piece of the hammer and cause each man to adjust his cord.

f. Demonstrate the method of cocking the pistol by means of the cord and explain how this simulates the self-loading action of the pistol.

g. Show how the pistol is kept as nearly on the mark as possible during the whole score. Caution the men to avoid unnecessary flourishes or movements between shots.

h. Demonstrate—

(1) The action of the pistol in recoil when a shot is fired.

(2) How the arm should not be permitted to bend at the elbow.

(3) How the pistol should move upward through a small arc and be deflected from the original point of aim only a short distance.

(4) How the forefinger should move forward after the explosion only far enough to allow the sear to become reengaged and immediately thereafter start pressing the trigger for the next shot.

(5) How the eye should not be allowed to close when the explosion occurs.

(6) How the breath should be held for each shot.

i. (1) The above demonstrations having been completed, the men are placed in front of the line of targets in pairs, one to practice and one to coach. The exercise is then carried on exactly the same as rapid fire in range practice. If a line of disappearing targets has been arranged for this exercise the targets appear, remain in sight the allotted time, and then dis-

appear. While the targets are in sight each man undergoing instruction attempts to fire five shots (simulated fire), cocking the piece for each shot, except the first, by a jerk of the cord with the left hand.

(2) If the targets are stationary the exercise begins with the command: 1. Commence, 2. FIRING, and ends with the command: 1. Cease, 2. FIRING.

(3) After each three or four scores of simulated fire the men of each pair are directed to change places, the firer becoming the coach and the coach becoming the firer.

j. (1) In this exercise the coach watches the man carefully and corrects all errors in grip, position, trigger squeeze, and manipulation of the piece, paying particular attention to the trigger squeeze.

(2) Rapid-fire exercises should be frequent but not of long duration.

(3) It is advisable to extend the time limit several seconds when rapid-fire exercise is first taken up. The time limit is then gradually reduced until it corresponds to the time prescribed for range firing, record practice.

Section VIII

FIFTH STEP—QUICK FIRE

396. *Training for quick fire.*—*a.* The training for quick fire is taken up after the rapid-fire exercise has been practiced sufficiently to be thoroughly understood. Thereafter, exercises in slow fire, rapid fire, and quick fire should all be continued until the end of the period of preparatory training.

b. For each shot the pistol is brought from *raise pistol* to the aiming position by the shortest route.

c. The pistol may be cocked after each shot in this exercise either by means of a cord, as in rapid-fire exercise, or by using the left hand to pull the hammer back after the position of raise pistol is resumed.

397. *Quick-fire exercise.*—*a.* Required for this exercise: A line of E targets that can be operated as bobbing targets from a pit or screen, or a line of E targets so arranged on pivots that the edge can be turned toward the firer when the target is not exposed.

b. Give the command: 1. Inspection, 2. PISTOL, and verify the fact that all pistols are unloaded.

c. Explain to the assembled command that the trigger squeeze is the same in quick fire as in slow fire.

d. Demonstrate the correct method of bringing the piece from *raise pistol* to the aiming position.

e. Show how the pistol is cocked between shots when the left hand is used instead of the cord.

f. (1) The above demonstrations having been completed, the men are placed in pairs in front of the line of bobbing targets, one man of each pair to act as coach for the other man.

(2) The exercise is then carried on exactly the same as quick fire in range practice. The targets appear, remain in sight the allotted time, and then disappear. While the targets are in sight each man who is undergoing instruction aims, fires one shot (simulated fire), and returns his piece to the position of *raise pistol.*

(3) After three or four scores of simulated fire the men of each pair are directed to change places.

g. (1) The coach watches carefully the man going through the exercises and corrects all errors in the grip, position, holding the breath, trigger squeeze, and the manipulation of the piece, paying particular attention to the trigger squeeze.

(2) It is advisable to extend the time limit about two seconds for each shot when quick-firing exercise is first taken up. The time is then gradually reduced until it corresponds to the time prescribed for range firing, record practice.

h. When disappearing targets can not be provided for this exercise it may be held with stationary E targets. The command UP is given to signify that the targets are in sight, and the command DOWN to signify that they have been withdrawn.

i. Practice in quick fire should be held frequently, but the periods of practice should not be of long duration.

j. If the range is some distance from the area designated for preparatory exercises, or it is impracticable to arrange for a line of bobbing targets, L targets may be substituted for the bobbing targets.

Section IX

SIXTH STEP—EXAMINATION ON PREPARATORY INSTRUCTION

398. *Examples of questions and answers.*—*a.* The questions and answers given herein are merely examples. Each man should be required to explain each item in his own words.

Instructor. Examine your pistol to see that it is unloaded.

Q. What are the safety devices of the pistol?—A. The safety lock, the grip safety, the half-cock notch, and the disconnector.

Q. Show me how you test the safety lock.—A. I cock the pistol, move the safety lock up into place, and then grip the stock and see if the hammer remains up when pressure is applied to the trigger.

Q. Show me how you test the grip safety.—A. I cock the pistol, see that the safety lock is down, and then, without putting any pressure on the grip safety, I see if the hammer will remain up when a strong pressure is applied to the trigger.

Q. Show me how you test the half-cock safety device.—A. I half cock the pistol, grip the stock, and see if the hammer remains at half cock when pressure is applied to the trigger. Then I take my finger off the trigger, pull the hammer back almost to full cock, and let go of it to see if it stops at half cock as it falls.

Q. Show me how you test the disconnector.—A. I cock the pistol and grip the stock; then with my left hand I move the slide to the rear a quarter of an inch; I then apply a strong pressure on the trigger and release the slide to see if the hammer will remain up. I also pull the slide fully back until it is held in place by the slide stop; then I grip the stock, apply a strong pressure on the trigger, and release the slide by pressing down the slide stop with my left hand. The hammer should remain up after the slide moves forward into place.

Q. If the hammer does not remain up after the slide moves forward into place, what does it indicate?—A. That with ball ammunition the pistol would continue to fire automatically as long as pressure is maintained on the trigger, which is very dangerous.

Q. If any of the tests of the safety devices fail at any time, what would you do?—A. I should report the matter at once to my platoon or company commander.

Q. What is this [indicating a sighting bar]?—A. A sighting bar.

Q. What is it used for?—A. To teach men how to aim.

Q. Why is it better than a pistol for this purpose?—A. Because the sights are much larger and slight errors can be more easily seen and pointed out.

Q. What does this represent?—A. The front sight.

Q. What does this represent?—A. The rear sight.

Q. What is this?—A. The eyepiece.

Q. What is it for?—A. To make the man hold his head in the right place, so that he will see the sights properly aligned.

Q. Is there an eyepiece on the pistol?—A. No; a man learns by the sighting bar how the sights look when properly aligned, and he must hold the pistol while aiming so as to see the sights in the same way.

Q. Adjust the sights of this sighting bar so that they are in proper alignment with each other. [Verified by instructor.]

Q. Now that the sights are properly adjusted, have the small bull's-eye moved until the sights are aimed at it properly. [Verified by instructor.]

Q. Tell me what is wrong with this aim. [The instructor now adjusts the sights of the sighting bar on the bull's-eye with various slight errors, requiring the man to point out the error.]

Q. Show me how to grip the stock of the pistol.

Q. Show me the position you take when you are going to shoot, standing, kneeling, prone.

Q. How do you squeeze the trigger?—A. I squeeze it with such a steady increase of pressure as not to know exactly when the hammer will fall.

Q. If the sights get slightly out of alignment while you are squeezing the trigger, what do you do?—A. I hold the pressure I have on the trigger and only go on with the increase of pressure when the sights become aligned again.

Q. If you do this, can your shot be a dab one?—A. No.

Q. Why?—A. Because I can not flinch, for I do not know when to flinch, and the sights will always be lined up with the bull's-eye when the shot is fired, because I never increase the pressure on the trigger except when the sights are properly aligned.

Q. When you are practicing in slow fire and your arm becomes unsteady and your aim uncertain, what should you do?—A. I should come back to *raise pistol* without firing the shot and then try again after a short rest.

Q. If it is impossible for you to hold the pistol very steady, can you still do good shooting?—A. Yes; if I press the trigger properly.

Q. Tell me why that is.—A. Because the natural unsteadiness of the arm moves the whole pistol and the barrel remains nearly parallel to the line of sight. But if I give the trigger a sudden pressure the front end of the barrel will be thrown out of line with the target and the bullets will strike far out from the mark.

Q. What causes this deflection of one end of the pistol when the trigger is given a sudden pressure?—A. The sudden pressure

itself causes some of it, but most of it is caused by the flinch that always accompanies this kind of a trigger pressure.

Q. What does a man do when he flinches in shooting a pistol?—A. He usually thrusts his hand forward as if trying to meet the shock by suddenly stiffening all his muscles.

Q. Must the trigger always be squeezed slowly in order to do it correctly?—A. No. I squeeze it the same way in rapid fire and quick fire. The time is shorter but the process is the same.

Q. What is meant by calling the shot?—A. To say where you think the bullet will hit as soon as you shoot and before the shot is marked.

Q. How can you do this?—A. By noticing exactly where the sights point at the time the pistol is fired.

Q. If a man can not call his shot correctly, what does it indicate?—A. That he did not squeeze the trigger properly and consequently did not know where the sights were pointed at the instant the discharge took place.

Q. Show me how you hold your breath while aiming.

Q. Take your pistol. Aim at that bull's-eye and squeeze the trigger a few times, calling the shot each time. [The instructor particularly notes the holding of the breath.]

Q. Show me how you come to a position of aim from "Raise, pistol."

Q. Show me how you come to the aiming position in drawing the pistol from the holster in an emergency.

Q. Take this pistol with the cord tied to the hammer and fire a rapid-fire score at that target [simulated fire].

Q. Fire a score [simulated fire] at that quick-fire target. I will give the command UP when it is supposed to come into sight, and the command DOWN when it is supposed to be withdrawn from view.

Q. What do you do in case a cartridge misses fire?—A. I bring the piece to *raise pistol*, grasp the slide with my left thumb and finger, pull the slide fully back and let go of it. This throws out the faulty cartridge and loads in another cartridge.

Q. Are there any points about pistol firing that you do not understand?

NOTE.—In all the demonstrations by the man undergoing examination the instructor carefully notes all points that are covered in the preparatory exercises.

b. Each man will be put through a thorough test along the line indicated in these questions and answers before he is allowed to fire.

SECTION X

GALLERY PRACTICE

399. *Effective date.*—The provisions of paragraphs 400 to 403, inclusive, will apply as soon as the automatic pistol, caliber .22, is issued to the service.

400. *Value of gallery practice.*—After the soldier has been thoroughly instructed in the preceding steps he will be advanced to gallery practice. No man should fire gallery practice until he has qualified in the preparatory exercises and can pass the test outlined in paragraph 398. It is difficult to hold the soldier's interest in preliminary exercises if they are unduly prolonged. Gallery practice, however, with its actual firing and observed results, stimulates competitive endeavor. Rapid progress, particularly in teaching the trigger squeeze, may be made. As there is no recoil nor loud report to induce flinching or nervousness, the soldier soon learns that he can make good scores. Not only to the beginner is gallery practice of value; to the good shot it is a means of retaining efficiency throughout the year; continued practice is essential in maintaining pistol marksmanship.

401. *Table, gallery practice.*—During the month preceding range firing the minimum number of scores shown in the following table will be fired by all who are required to fire under the provisions of paragraph 368. The procedure of firing is similar to that in range firing. No reports of the results of gallery practice are required, but the firing record should be posted in order to stimulate interest and competition among the men.

Range	Slow-fire target (iron gallery target or paper target X)		Rapid-fire target (same as slow fire)		Quick-fire target (target E—Bobbing)	
	Time	Scores	Time	Scores	Time	Scores
5 yards	No time limit	2	15 seconds per score.	2		
10 yards	do	2	do	2		
15 yards					2 seconds per shot.	2

402. *Additional practice.*—In addition to the minimum number of scores prescribed in the table in paragraph 401, gallery practice should be carried on throughout the year, the amount and details of the practice being left to the discretion of the organization commander. Varied targets, such as tin cans, bottles, glass balls, and pendulum or moving targets will stimulate interest.

403. *Matches.*—Matches between the men and between teams of the same or different units should be promoted and encouraged throughout the year.

Section XI

COACHING METHODS AND ORGANIZATION

404. *Range practice.*—*a.* The object of range practice is to teach the men to apply, with a loaded pistol, the principles of good shooting that they have learned during the preparatory exercises.

b. Each man while firing must have a coach to correct him whenever he violates any of these principles.

c. Slow-fire practice should be carried on until the men under instruction thoroughly understand the principles of good shooting.

d. When rapid fire and quick fire are first taken up the time limit should be extended a few seconds. The time should then be gradually reduced until the scores are being fired in the time prescribed for record practice.

405. *Dummy cartridges.*—*a.* Dummy cartridges are of great value in teaching both slow and rapid fire.

b. Dummy cartridges will not be used except on the firing line of the pistol range. The same precautions will be observed as in using service ammunition.

406. *Coaching slow fire.*—*a.* The coach stands on the left side of the firer in such a position as to be able to observe his trigger finger, his grip, his eye, and his position. It is the duty of the coach to correct all errors. The coach fills the magazines for the firer and hands them to him. At the beginning of range practice the magazines should be filled partly with service ammunition and partly with dummy cartridges. The firer must not know how many dummy cartridges are in the magazine or the order in which they are packed.

b. The object of placing dummy cartridges in the magazine is to show the coach whether or not the man under instruction is squeezing the trigger correctly, and, in case of an improper trigger squeeze, to bring the fact forcibly to the attention of the firer himself. When a loaded cartridge is fired the flinch is often masked by the recoil of the pistol and the firer is not conscious of having flinched. When the hammer falls on a dummy cartridge, which the firer thinks is loaded, the sudden stiffening of the muscles and the thrusting forward of the hand to meet the shock that does not come is apparent to everybody in the vicinity, including the firer himself. The mixing of dummy cartridges with service ammunition causes the man to make a determined effort to press the trigger properly for all shots.

c. The firing of scores with dummy cartridges and service ammunition should not be confined to the early stages of training. It is advisable to have some practice of this kind each day during the entire period of instruction practice. Many expert pistol shots use this form of practice in training for competitions.

d. The following items of instruction are given to a pupil on beginning range practice, even though that person has already done a great deal of shooting. Once a person has been put through this instruction it is usually not necessary to repeat it during subsequent periods of range practice:

(1) Explain the method of grasping the piece.

(2) Show the amount of force used in gripping the stock by grasping the pupil's hand, saying: "This is too tight a grip" [gripping his hand very tightly]. "This is too loose a grip" [gripping his hand loosely]. "This is the right amount of force to use in gripping the stock" [gripping his hand with the firm but comfortable grip that should be used in shooting].

(3) Explain and demonstrate the position of the body, the feet, and the arm (par. 387 and fig. 6), and have the pupil assume this position.

(4) Explain the proper method of aiming.

(5) Explain that any man can aim and hold well enough for a good score. Have the pupil assume the proper position and aim at the target with an empty pistol without attempting to press the trigger, to see how long he can hold the sights on or near the bull's-eye. Explain to him that this aiming at the target with an empty gun demonstrates how near to the center his bullets will strike provided he presses the trigger properly.

(6) Explain the proper method of pressing the trigger.

(7) Have the pupil aim at the target with an empty pistol and then press the trigger for him several times, as described in paragraph 407 (fig. 7), directing the pupil to "call the shot" each time the hammer falls.

(8) Have the pupil aim at the target with a loaded pistol and then press the trigger for him as described in paragraph 407, directing him to "call the shot" each time the piece is fired. Fire a score of five shots in this way.

(9) Have the pupil fire a score of five shots, pressing the trigger himself, to see if he can press the trigger properly and make as good a score as the one made when the coach pressed the trigger.

407. *Coaching squeezing the trigger.*—One method of showing the men under instruction how to squeeze the trigger properly is to have him hold and aim the pistol while the coach presses the trigger. This is done in the following manner:

a. The coach demonstrates the value of correct trigger press to the student by placing his hands in the position shown in Figure 7 and pressing on the end of the pupil's trigger finger with his left thumb. The coach cautions the pupil to neither assist nor resist the pressure which is put on the end of his trigger finger but to devote his whole attention to his aim and hold.

b. The coach must be careful to apply a slow, steady pressure to the finger of the pupil and, at the same time, not interfere with the pupil's aim while applying this pressure. As a rule, the coach should consume from five to ten seconds in putting sufficient pressure on the pupil's finger to fire the pistol.

c. When pressing the trigger for a pupil as above described the coach should hold his head well to the rear to keep from having his left ear too near the muzzle of the piece.

d. If the firer shows a tendency to apply the last part of the squeeze himself, by giving the trigger a sudden pressure, he is directed to place his finger below the trigger guard and the coach applies the pressure directly to the trigger instead of through the finger of the man under instruction.

408. *Calling the shot.*—Men should be required to call each shot in slow fire. If a man does not call the shot immediately after firing the coach directs him to do so.

409. *Coaching rapid fire.*—*a.* The firing of scores with dummy cartridges and service ammunition mixed is a very valuable

form of rapid-fire practice. The coach fills the magazine in such a way that the firer can not know the order in which the cartridges are placed.

b. The coach must watch the man closely, and each time he is seen to flinch, whether on a loaded or a dummy cartridge, the coach should caution him.

c. When the hammer falls on a dummy cartridge the firer grasps the slide with his left hand, pulls it fully back, and releases it. This ejects the dummy and loads in another car-



FIG. 7.—Coach pressing the trigger

tridge. The time limit must be extended to compensate for the time lost in ejecting the dummy cartridges. It should not take more than two seconds to eject a dummy cartridge and resume the aiming position.

410. *Coaching quick fire.—a.* The use of dummy cartridges and the coaching methods are the same in quick fire as in rapid fire.

b. The occasional use of dummy cartridges in both rapid fire and quick fire should be continued throughout the entire period of instruction practice.

411. *Safety precautions on the range.—a.* Never place a loaded magazine in the pistol until you have taken your place at the firing point.

b. Always remove the magazine and unload the pistol before leaving the firing point.

c. Always hold the loaded pistol at the position of *raise pistol,* except while aiming.

d. When firing ceases temporarily, lock the piece and hold it at *raise pistol.* Do not assume any position except raise pistol without first removing the magazine and unloading.

e. If one or more cartridges remain unfired at the end of a rapid-fire or quick-fire score remove the magazine and unload immediately.

412. *Range organization.—a.* The work on the range should be so organized that no men are idle for any length of time. A good arrangement is four or six orders per target. It should never be necessary to assign more than six orders. If there is not a sufficient number of targets to provide for this, the extra men should remain off the range and be given other instruction.

b. When range facilities permit, rifle firing and dismounted pistol firing should be carried on at the same time. One method is to have a line of pistol targets on a flank of each firing point of the rifle range, so arranged that the firing points of the rifle range and of the pistol range are on one line. There should be about 50 yards interval between the rifle range and the pistol range. The targets may be placed on the ground instead of in pits. The bobbing targets are arranged to revolve on their own axis and are operated from behind the firing line by means of cords. When the targets are to be marked the whole line ceases firing, unloads pistols, and moves up to the targets to record the hits and paste the shot holes. In slow fire the coach can keep the firer informed as to the location of his hits by use of field glasses.

c. When the time is short and range facilities and proper supervision permit, rifle firing and dismounted pistol firing may be carried on at the same time. While one group is firing on the rifle range the other is firing on the pistol range. As the men complete a score with the rifle they move to the pistol range and their places at the rifle-firing point are filled by men who have completed a score of pistol firing. As soon as all men present have completed their scores with the rifle the whole group moves back to the next firing point (moving

the pistol targets if necessary) and continues as before with the alternate rifle and pistol firing.

d. The pistol targets may be placed so that the line of fire is at right angles to the line of fire of the rifle range if the terrain permits. When it is not practicable to have pistol firing and rifle firing at the same time, other means will be adopted to keep the men occupied while they are not actually firing or coaching.

Section XII

GENERAL PROVISIONS FOR RANGE FIRING

413. *Plan for range firing.*—The general plan is as follows:

	Yards	Scores, minimum	Rounds	
Instruction practice				
Slow fire	15	1	5	
	25	1	5	
Rapid fire	15	1	5	
	25	1	5	
Quick fire	15	2	10	
	25	2	10	
				40
Record practice				
Slow fire	25	2	10	
Rapid fire	15	2	10	
	25	2	10	
Quick fire	25	3	15	
				45
				85

414. *Ammunition allowance.*—The ammunition allowance is that prescribed annually by the Militia Bureau.

415. *Instruction practice.*—In order to insure uniformity of instruction, the order of procedure and a minimum number of shots are prescribed. In order that the expenditure of ammunition may be fully under the control of the organization commander, he may advance men who have fired during a preceding season without requiring them to fire the full number of shots prescribed as a minimum for any type of fire in instruction practice, provided that they fire at least one-half the minimum.

In the exercise of this privilege, however, the organization commander should guard against depriving the soldier of needed practice.

416. *Record practice.—a. Scoring.*—In all record practice, scores will be kept and the record of firing prepared as prescribed for rifle firing paragraphs 158 and 159.

b. Scoring in rapid and quick fire.—In rapid or quick fire the scorer does not announce the name of the firer after the result of each shot has been signaled. As soon as the value of each shot has been signaled it is announced; the number of misses, if any, is announced; the score is then entered; and finally the name of the firer with his total score is announced and the latter recorded.

c. Firing on wrong target.—In case two men fire on the same target in rapid or quick fire the resulting score will be rejected; the soldier at fault will be credited with such hits as he may have made on his own target and the other soldier will fire again.

d. Other mishaps.—Unfired shots, due to the fault of the soldier, count as misses. In case of defective cartridge or disabled weapon the entire score is not repeated; the soldier fires only the necessary number of shots to complete the unfinished score; where the time element enters, the time to be allowed will bear the same ratio to the time of a full score as does the number of shots to be fired to the number in a full score. For each shot fired before the commencement or after the close of the time limit the maximum possible per shot at the particular type of target will be deducted from the score.

417. *Order of procedure in range firing.—a.* Pistol firing commences with instruction practice, which is completed for each soldier before he proceeds to record practice.

b. The soldier may thus be advanced to record practice immediately after he has completed instruction practice without waiting for others less advanced. While engaged in record practice the soldier will do no other firing.

Section XIII

INSTRUCTION PRACTICE

418. *Tabulation.*—The following tables prescribe the firing in instruction practice in the order followed by the individual soldier. Target L is used in much of the practice, as the

bull's-eye makes competition keener and shows up errors as no other target can. The tables for slow fire, rapid fire, and quick fire apply to both automatic pistol and the revolver, when used.

419. *Slow fire.*

TABLE I.—*Slow fire—Target L*

Range	Time	Scores (5 shots each), minimum
15 yards	No time limit	1
25 yards	do	1

Unlimited time is permitted for slow fire in order to permit proper explanation of the causes of errors and indication of corresponding remedies. It is intended to be the elementary phase of instruction in the proper manipulation of the weapon and for determining and correcting the personal errors of the firer.

420. *Rapid fire.*

TABLE II.—*Rapid fire—Target L*

Range	Time	Scores (5 shots each), minimum
15 yards	11 seconds per score	1
25 yards	15 seconds per score	1

If pits are used, time is taken at the pits as in rapid-fire rifle practice. If pits are not used time is taken at the firing point. The target being up, the soldier stands with the weapon at *raise pistol*, loaded and locked. The command: 1. Commence, 2. FIRING, is given and the soldier must fire one score within the prescribed limit of time, at the end of which the command: 1. Cease, 2. FIRING, will be given. Intervals of time are measured from the last words of the commands.

421. *Quick fire.*

TABLE III.—*Quick fire—Target E—Bobbing*

Range	Time	Scores (5 shots each), minimum
15 yards	2 seconds per shot	2
25 yards	3 seconds per shot	2

SECTION XIV

RECORD PRACTICE

422. *Tabulation.*—The following tables prescribe the firing in record practice in the order followed by the individual soldier. The procedure is as in instruction practice.

423. *Slow fire.*

TABLE V.—*Slow fire—Target L*

Range	Time	Scores (5 shots each)
25 yards	No time limit	2

424. *Rapid fire.*

TABLE VI—*Rapid fire—Target L*

Range	Time	Scores (5 shots each)
15 yards	11 seconds per score	2
25 yards	15 seconds per score	2

425. *Quick fire.*

TABLE VII.—*Quick fire—Target E—Bobbing*

Range	Time	Scores 5) shots each)
25 yards	3 seconds per shot	3

SECTION XV

CLASSIFICATION, COMPENSATION, AND INSIGNIA

426. *Classification.—a.* All officers and enlisted men who are required or authorized to fire the dismounted pistol course and who are carried on the rolls of an organization during any part of the practice season, or who are attached for practice by proper authority, are classified as pistol expert, dismounted; pistol sharpshooter, dismounted; pistol marksman, dismounted; or unqualified, according to the proficiency exhibited in record practice.

b. All officers who attain the grade of pistol marksman, dismounted, or, better, will retain that qualification from the date of qualification until the next opportunity to requalify, or for one year if no opportunity for requalification is presented within that year. A soldier who has completed the dismounted course and is transferred thereafter, or who is discharged and reenlists, will not be given a seond opportunity to qualify in the same year. In case the soldier, at the time of transfer, has not completed his record practice for that year, his company commander will complete his individual record sheet to date and attach it to the service record which accompanies him, and the soldier will complete his firing with the organization to which transferred.

427. *Requirements for qualification.*—The requirements for qualification in the several grades of marksmanship, dismounted, are given in the following table:

Classification, dismounted

Grade	Average percentage on Tables V, VI, and VII
Pistol expert, dismounted	At least 85 per cent.
Pistol sharpshooter, dismounted	At least 78 per cent.
Pistol marksman, dismounted	At least 60 per cent.
Unqualified	Less than 60 per cent.

428. *Insignia.*—Insignia for marksmanship are issued and worn as prescribed in AR 600–35 and 600–40.

429. *Duplicates.*—The insignia will become the property of the persons to whom issued. If they are lost by the owner, or in transmission to him, or if they become unsightly from long wear, they may be replaced without cost to the owner. But in all cases the official certificate of the company commander to the effect that he has investigated the circumstances of the loss or damage and finds that no negligence can be imputed to the soldier will be required as evidence upon which to make the new issues. In case of loss, claim must be made within 60 days from date of loss. Duplicates, if desired, for use on separate coats, will be sold to those entitled to wear the insignia.

430. *How obtained.*—Immediately after the close of the practice season the company commander will report by letter to the commanding officer the names of men in his organization who have made a new or renewed qualification. With this letter the company commander will submit a requisition for the required number of badges and bars. This requisition will be disposed of as is any other special quartermaster requisition.

Section XVI

RECORDS AND REPORTS

431. *Records.*—The company record of individual practice, pistol marksmanship, dismounted, consists of Score Card for Pistol (Dismounted) Practice (W. D., A. G. O. Form No. 88) kept at the firing point during record practice.

432. *Reports.*—The reports of dismounted pistol firing will be submitted to the proper headquarters on the following forms as soon as possible after the completion of all record firing:

a. Report of Individual Classification (W. D., A. G. O. Form No. 90).

b. Consolidated Regimental Report of Classification (W. D., A. G. O. Form No. 91).

433. *Transmission and rendition of reports.*—See NGR 45.

Section XVII

TARGETS

434. *Target E.*—*a.* Target E is a drab silhouette, about the height of a soldier in a kneeling position, made of bookbinder's board or other similar material. (See fig. 8.) Hits are valued at 1. Any shot cutting the edge of the target is a hit.

b. Target E—Bobbing.—Target E—Bobbing, is so arranged as to be fully exposed to firer for a limited time, edge of target toward firer when target is not exposed. (See fig. 9.)

435. *Standard American target, 50-yard.*—The standard American target, 50-yard, used for competitions only, has a black circular bull's eye 8 inches in diameter which contains two inner rings 3.36 and 5.54 inches in diameter. There are four outer rings. The diameter of each ring and value of hits are as follows:

Diameter	Value of hit
Bull's-eye center ring, 3.36 inches	10
5.54 inches (in bull's-eye)	9
8 inches (in bull's-eye)	8
11 inches	7
14.8 inches	6
19.68 inches	5
26 8 inches	4

436. *Target L.*—Target L is a rectangle 6 feet high and 4 feet wide, with black circular bull's-eye 5 inches in diameter and seven outer rings. (See fig. 10.) Value of hits in the bull's-

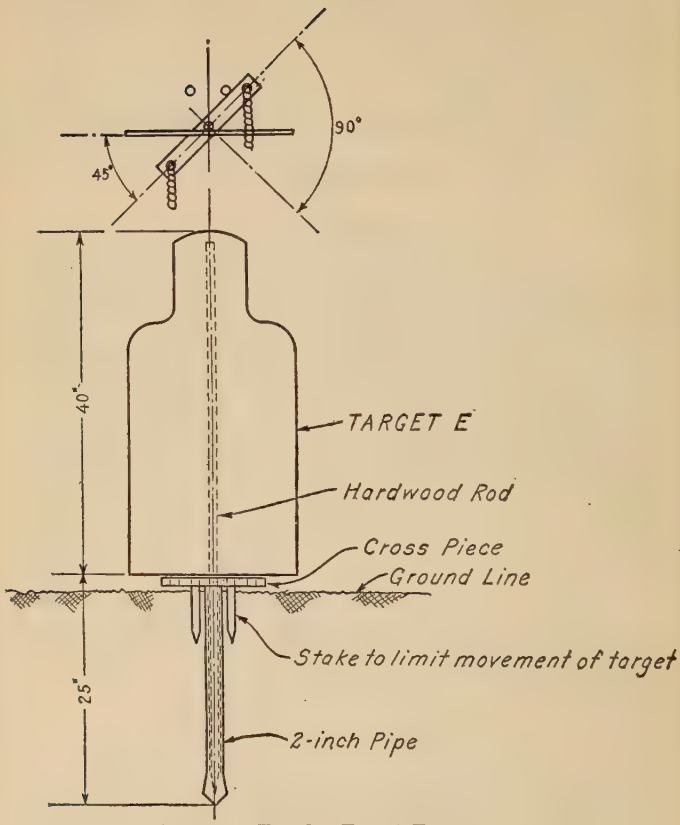


FIG. 8.—Target E

eye, 10. The diameter of each ring and value of hits are as follows:

Diameter	Value of hit
8½ inches	9
12 inches	8
15½ inches	7
19 inches	6
22½ inches	5
26 inches	4
46 inches	3
Outer, remainder of target	2

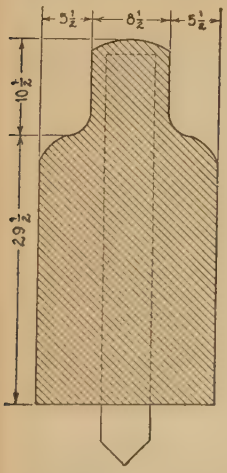


FIG. 9.—Target E—Bobbing

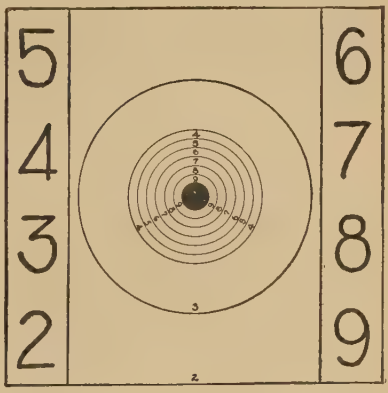


FIG. 10.—Target L

437. *Target X (miniature).*—A rectangular paper target, 8 by 12 inches. Black circular bull's-eye, 1⅓ inches diameter, value of hit, 5; center ring, 4⅓ inches diameter, value of hit 4; inner ring, 7⅔ inches diameter, value of hit, 3; outer remainder of target, value of hit, 2.

Section XVIII

PISTOL COMPETITIONS

438. *Object of pistol competitions.*—Pistol competitions are held for the purposes of fostering interest in target practice, of furnishing the means for the exchange of ideas among those who excel in pistol firing, and of classifying the best shots according to merit under similar conditions.

439. *Corps area or department competitions—When held.*—In every alternate year, or when ordered by the Secretary of War, corps area or department pistol competitions will be held. They will be held at the same place as the corps area or department rifle competitions and will either precede or follow those competitions as the corps area or department commander may prescribe.

440. *Selection of competitors.—a. Officers.*—(1) Each regimental commander will report to the corps area or department commander the name of any officer of his regiment who may desire to enter the competition and whom he can recommend for that purpose. He will further state, in case more than one officer is recommended, the comparative proficiency as pistol shots of those reported. From these reports and from such additional reports as he may require, the corps area or department commander will select one officer, as competitor, from each regiment of Cavalry, Infantry, Corps of Engineers, Field Artillery, and Coast Artillery Corps; one from each battalion of mounted engineers and Signal Corps, and one from each group of Air Corps in his command. In addition he may select one officer from each 50 officers (exclusive of medical officers and chaplains) not included above in his corps area or department.

(2) In case a regiment or group of the Air Corps is divided between two or more corps areas or departments, the final selection of an officer therefrom will be referred to The Adjutant General.

b. Enlisted men.—The commanding officer of each troop of Cavalry and of each battery of Field Artillery will select from the enlisted men of his organization the most suitable enlisted man, due regard being paid to excellence of shooting with the pistol as well as steadiness and good soldierly habits and conduct, and report the names of the men thus chosen to the post commander. Enlisted men of the Corps of Engineers, Infantry, Coast Artillery Corps, Signal Corps, and Air Corps armed with the pistol may be represented as follows:

(1) *Corps of Engineers.*—Two competitors from each regiment, to be selected by the regimental commander, and one competitor from each battalion of mounted engineers, to be selected by the battalion commander.

(2) *Infantry.*—Two competitors from each regiment, to be selected by the regimental commander.

(3) *Coast Artillery Corps.*—Two competitors from each regiment, to be selected by the regimental commander.

(4) *Signal Corps.*—One competitor from each company, to be selected by the organization commander.

(5) *Air Corps.*—One competitor from each air squadron, to be selected by the organization commander.

The names of the men so selected will be reported through military channels to the corps area or department commander who will send the competitors to the place of competition at the proper time.

(6) Enlisted men of other organizations and branches armed with the pistol and enlisted men on the Detached Enlisted Men's List may be permitted but not required to compete. When permitted to compete they will be selected as in *b* above, and on the basis of one enlisted man for each 50 not included above, by their respective company or other commanding officers.

441. *Assembly of competitors.*—The officers and enlisted men thus selected will be assembled at times and places designated and, after the completion of the prescribed preliminary practice, the enlisted men will compete for places on the corps area or department pistol team. The officers will compete at the same time with the enlisted men and with each other, not for places on the team but for badges.

442. *Preliminary practice.*—The preliminary practice will consist, for each competitor, of the following practice, dismounted, in the following order:

a. First stage.—Slow fire, 50 yards—standard American target. Two scores (5 shots each); one minute per shot.

b. Second stage.—Timed fire, 25 yards—standard American target. Two scores (5 shots each); 20 seconds per score.

c. Third stage.—Rapid fire, 25 yards—standard American target. Two scores (5 shot each); 10 seconds per score.

443. *Competition proper.*—The firing in competition proper will be the same as prescribed for preliminary practice, except that the course will be fired through twice.

444. *Corps area or department pistol team.*—The team will be composed of those enlisted competitors making the highest aggregate score for the entire competition proper. The strength of the team will be in direct proportion to the number of enlisted competitors engaged in the competition, the ratio being fixed at one team member to five competitors, fractions not considered.

445. *Prizes for enlisted men.*—To the members of the team thus selected, bronze badges will be awarded, with gold (first grade), silver (second grade), and bronze (third grade) clasps, according to order of merit and in the ratios indicated in the following table:

Competitors	Team	First grade	Second grade	Third grade
30 or more	6	1	2	3
35	7	1	2	4
40	8	1	2	5
45	9	1	3	5
50	10	2	3	5
55	11	2	3	6
60	12	2	4	6
65	13	2	4	7
70	14	2	4	8
75	15	2	5	8
80	16	2	5	9
85	17	2	5	10
90	18	2	6	10
95	19	3	6	10
100	20	3	6	11
105	21	3	7	11
110	22	3	7	12
115	23	3	7	12
120	24	3	8	13
125	25	3	8	14
130	26	3	8	15
135	27	3	9	15
140	28	4	9	15
145	29	4	9	16
150	30	4	10	16
155	31	4	10	17
160	32	4	10	18
165	33	4	11	18
170	34	4	11	19
175	35	4	11	20
180	36	4	12	20

and so on, according to the principle illustrated in the above table; that is, for each 45 men or fraction, one badge with gold clasp; for each 15 men, disregarding fractions, one badge with silver clasp; the remaining members of the team, badges with bronze clasp.

446. *Prizes for officers.*—Officers will be awarded badges as follows: A separate list will be made so as to include the names of officers and enlisted competitors, arranged in order of merit in the competition. The officers will then be awarded badges according to their position on the consolidated list by applying the table of prizes given in paragraph 445 to the total number on that list. In this way enlisted men compete only against enlisted men for prizes, but officers compete against both themselves and enlisted men.

447. *Presentation of prizes.*—*a.* The presentation of competition prizes will ordinarily be made at the conclusion of the contest and will be conducted with the ceremony and formality warranted by the importance of the occasion. Timely requisition should be made to the corps area quartermaster for the prizes required.

b. Winners of badges in pistol competitions will not part with them without authority from the Secretary of War, but will hold them subject to inspection at any time. These badges will be engraved as prescribed in AR 600–35. If lost or destroyed without fault or neglect on the part of the person to whom originally issued, duplicate badges, with appropriate engraving, will be issued only upon certification by The Adjutant General, the cost of such duplicate badges and engraving not to be borne by the War Department.

c. The names of the winners, with rank and organization, and aggregate score will be published in corps area or department orders, and at least two copies of such orders will be furnished The Adjutant General.

448. *Competition officials.*—The officials detailed for the corps area or department rifle competition will also serve as officials of the corps area or department pistol competition. They are—

a. Officer in charge.—The officer in charge will be an officer of experience, preferably a field officer. He will have control of the range for the conduct of the competition and for the police and government of the range during the competition. He will prescribe the hours for preliminary practice and for the competition proper. His decision on such matters will be final.

b. Assistant to officer in charge.—An assistant to the officer in charge will report to and receive instructions from the officer in charge and will assist him in the management of the competition. He will also act as chief range officer. He will have immediate charge of the range and all pit details pertaining thereto.

c. Adjutant.—The adjutant will discharge the duties of adjutant to the officer in charge, issue by direction of the officer in charge the necessary orders, and perform such other duties as may be assigned to him. He will be in direct charge of the competitors, whether they are encamped or assigned to companies in barracks.

d. Quartermaster.—The quartermaster will have charge of quartering all competitors and arranging for the transportation of their baggage and property upon their arrival at the competition. If they encamp, he will lay out and put up the camp. He will provide all the property, including stationery and office supplies, other than ordnance and signal property, required for the competition and for the preparation and care of the range, and perform such other duties as may be assigned to him by the officer in charge.

e. Statistical officer.—The statistical officer will assign the competitors to targets and order of firing by lot or by a scheme worked out prior to the competition. He will verify the additions of the scores as reported by the scorers, grade them in order of excellence, and prepare the result for official announcement. He will issue such bulletins from time to time as may be ordered by the officer in charge.

f. Ordnance officer.—The ordnance officer will make timely requisition for all ammunition and ordnance stores needed in the matches, and during the matches will supply these stores as required.

g. Signal officer.—The signal officer will have charge of the electrical equipment of the range and procure on requisition such telephones, signal stores, and field glasses as may be needed for the proper conduct of the competition.

h. Range officers.—Under direction of, and as assistants to, the chief range officer are a number of range officers, not fewer than one to two targets in the pit and one to two firing points on the range. Their duties are to supervise the marking and scoring, to see that the firing is conducted according to regulations, and to perform such other duties as may be required. So far as practicable, officers experienced in range work will be

selected for duty as range officers. During the firing at all competitions a range officer will be detailed in charge of the pit at each distance. The officer in charge and chief range officer will formally assemble and instruct the range officers in their duties before the opening of the competition and place them on duty during the preliminary practice for their practical instruction.

449. *Details of enlisted men.*—The officer in charge will apply for such details of enlisted men as he may consider necessary. These details will be permanent for the competition.

450. *General regulations.*—The rules governing every feature connected with range practice as prescribed herein will, subject to the following regulations, govern the procedure in competitions.

451. *Uniform.*—Competitors will wear service uniform and the cartridge belt without suspenders.

452. *Arms.*—Officers and men will use the pistol as issued or sold by the Ordnance Department.

453. *Sights.*—No alteration of the service sights will be permitted except that the sights may be blackened.

454. *Trigger pull.*—The trigger pull will always be at least 4 pounds for the pistol, and will be tested (holding the barrel vertically) by a range officer, before firing each day, and at each range. Competitors will submit their arms for further inspection whenever required.

455. *Ammunition.*—The ammunition used will be the service cartridge as issued by the Ordnance Department, unless the use of other ammunition is authorized.

456. *Changing arms.*—No two competitors will fire in any competition with the same pistol. No competitor will change his pistol during any competition, unless his first weapon has become unserviceable through accident, which must be verified by a range officer.

457. *Cleaning pistols.*—Cleaning of pistols will be permitted between ranges only.

458. *Shelter for firer.*—Shade or shelter for firer will not be permited at any range.

459. *Punctuality.*—Competitors must be present at the firing point at the proper time and in the order stated on their score cards. No application on the part of a competitor for any alteration in his assignment will be entertained.

460. *Order of firing.*—In slow fire the competitors will place themselves at the firing point by twos, and will fire alternately,

the odd number of each pair being on the right and firing first. In rapid fire but one man at a time will be at the firing point of a target.

461. *Loading pistols.*—Pistols will not be loaded except by command or until position for firing has been taken. All snapping of pistols or simulated firing in rear of the firing points is prohibited.

462. *Position in pistol competition.*—At the firing point, when not firing the pistol will be held at *raise pistol.* While firing, the pistol will be held and supported by one hand only, the arm extended at will but free from the body and not supported in any way, the firer standing without a body or artificial rest.

463. *Withdrawing target prematurely.*—In slow fire, if the target is withdrawn from the firing position just as a shot is fired, the scorer at that firing point will at once report the fact to the range officer in charge of the scoring on that target, who will investigate, and if satisfied that the case is as represented will direct that the shot be not considered and that the competitor may fire another shot.

464. *Delay in firing.*—In slow fire, competitors will not be hurried in firing, but such slight delay permitted after firing each shot as they may desire, provided the time of firing the score does not exceed 30 seconds per shot. If an accident to a target, or any other cause over which the soldier has no control, prevents him from completing his score within the time limit, he will be permitted such additional time as a range officer may decide.

465. *Coaching.*—No coaching or unnecessary communication of any kind with those actually firing will be permitted.

466. *Warming or fouling shots.*—No warming or fouling shots will be allowed at any competition.

467. *Spectators.*—During the progress of a match or competition no one except the officers on duty on the range, the competitors, and score keepers will be permitted within the ropes without special permission of the officer in charge.

468. *Stations of competitors awaiting turn to fire.*—Competitors will be stationed 5 yards in rear of the firing point and will remain there until called to the firing point by the score keeper.

469. *Expression of approbation.*—Expression of approbation or disappointment on the part of the spectators or competitors must not be uttered loud enough to be heard at the firing point.

470. *Protests.*—Protests and objections must be submitted to the range officer in charge of the target and not directly to the officer in charge. In case a competitor is not satisfied with the decision of the range officer, he may appeal to the officer in charge. Final appeals from the decisions of the officer in charge must be made in writing and forwarded through that officer to the authority ordering the competition.

471. *Misses.*—In all firing, before any miss is signaled, the target must be withdrawn from the firing position and carefully examined by a range officer. Whenever the target is reversed and a miss is signaled it will be assumed that this examination has been thoroughly made and no challenge of the value signaled will be entertained or resignaling of the shot allowed.

472. *Accidental discharges.*—All shots fired by the soldier after he has taken his place at the firing point and it is his turn to fire—the target being ready—will be considered in his score even if his piece was not directed toward the target or is accidentally discharged.

473. *Firing on wrong target.*—Shots fired upon the wrong target will be entered upon the score of the man firing as a miss, no matter what the value of the hit upon the wrong target. In rapid fire the soldier at fault is credited with only such hits (if any) as he may have made on his own target. The other soldier repeats his score unless all the hits on his target have the same value, in which case he is given this value for each shot fired.

474. *Numbering competitors.*—At competitions where there are a large number of competitors the labor of the statistical officer will be greatly lightened and the prompt announcement of the scores facilitated by giving each competitor a number by which he is known throughout the firing.

475. *Score cards.*—Each competitor should be given a score card stating his target and order of firing at each range and containing space for the record of shots fired and for the signature of the scorer and range officers. As scores are completed an officer detailed for the purpose should, without waiting for all firing to cease, collect the records of the score and transmit them to the statistical officer for entry upon the permanent records and bulletins.

476. *Stations of scorers.*—The scorers will be seated close to and in rear of the firing-point stakes and will announce and record scores in the prescribed manner.

477. *Altering scores.*—Competitors must pay attention to the score as announced and recorded so that any error may be promptly investigated. The recorded value of any shot will not be changed after the following shot has been fired unless some special message with reference to it is received from one of the range officers in the target pit. Any alteration of a score must be witnessed by the officer in charge of the firing point and indorsed with his initials.

478. *Special rules.*—Such special rules or directions as the officer in charge may give must be rigidly observed by competitors and all other persons upon the range.

479. *Evading rules.*—Any competitor who may be detected in an evasion of the conditions prescribed for any competition or who otherwise misbehaves may be debarred from the competition.

480. *Acquaintance with regulations.*—Competitors and all others connected with competitions must make themselves acquainted with the foregoing regulations as well as with the conditions of the competitive firing in which they may be participating, as the plea of ignorance of either of them will not be entertained.

481. *Ties in pistol competition.*—*a.* Ties in individual matches will be decided by the aggregate score at the stage last in order in the course of fire. If still a tie, by the aggregate score at the stage next last in order, etc. If still a tie, by similarly considering the rank of the scores at the stages in inverse order.

b. At any stage the rank of scores whose aggregates are equal shall be decided—

(1) By the fewest misses.

(2) By the fewest hits of lowest value.

(3) By the fewest hits of the next lowest value, etc. If still a tie, in slow fire, by the inverse order of shots, counting singly from the last to the first. If still a tie, when trophies or medals of a different kind are to be awarded, the competitors concerned will fire single shots at the longest range until the tie is broken.

482. *Post competitions.*—To further local interest in target practice, post contests in pistol practice are suggested. When practicable, post competitions should form part of the exercises for field days. The program for these competitions is left to the discretion of the post commander. The firing should prefer-

ably be team firing. The rules governing the corps area or department competitions will, as far as applicable, regulate the procedure in post competitions.

483. *Distinguished pistol shots.—a. Requirements.*—An officer or enlisted man serving in any component of the Army of the United States, or the National Guard of any State, Territory, or the District of Columbia, when not in Federal service, will be designated by the War Department as a distinguished pistol shot when he has won any three of the following authorized badges or medals:

(1) The badges or medals awarded in corps area, department, departmental, division, divisional, combined departmental, combined divisional, or Army pistol and revolver competitions.

(2) The medals won in the national pistol or revolver matches or the national individual pistol matches.

(3) The badges awarded to the principals and alternates winning places on pistol teams selected to represent, in the national pistol team matches—

(*a*) The Regular Army or a part thereof;

(*b*) The Organized Reserves or a part thereof; or

(*c*) The duly organized National Guard of any State, Territory, or the District of Columbia, provided that commencing with the year 1925 only the first 10 teams in order of merit in such national pistol team matches will be recognized in computing the credits toward designation as a distinguished pistol shot. These badges will be awarded directly by the War Department.

(4) The medals won by members who actually fired on a pistol team competing in the national pistol team matches, provided that commencing with the year 1925 only the first 10 teams in order of merit in such matches will be recognized in computing the credits toward the designation as a distinguished pistol shot. These medals are awarded through the National Board for the Promotion of Rifle Practice.

b. Civilians.—Any civilian will be designated by the War Department as a distinguished pistol shot when he has won as many as three of the medals or badges specified in *a* above.

c. Attainment of distinguished classification.—The year in which a pistol shot first became eligible for designation by the War Department as a distinguished pistol shot is the year during which he is regarded as having attained the distinguished classification and for which he will be so designated, notwith-

standing the fact that the necessary credits were won in prior years.

d. Badges.—To each distinguished pistol shot an appropriate badge, known as the distinguished pistol shot badge, engraved as prescribed in AR 600–35, will be issued, which if lost after being received by him can be replaced by purchase only; authority for such replacement must be obtained from the War Department. All duplicate distinguished pistol shot badges which may be authorized will also be engraved, the cost of such engravings not to be borne by the War Department.

e. Application.—Individuals who desire to be designated by the War Department as distinguished pistol shots and to receive the distinguished pistol shot badge must make individual application therefor to The Adjutant General. Each such application should contain a chronological statement of all pistol competitions or matches participated in by the applicant, the kind of medals won by him, and his rank and organization on each occasion. If the application is from a person in the military service, it should also set forth the applicant's present rank and organization, and must be forwarded through military channels.

f. Restriction on competition of distinguished pistol shots.—Distinguished pistol shots are not eligible to compete for badges or medals in corps area or department competitions with the arm in the use of which they are distinguished.

g. Awards to be noted in records.—Awards of these badges will be noted in the personal records of officers, on service records of enlisted men, or similar records of each distinguished pistol shot.

INSTRUCTION AND QUALIFICATION WITH BAYONET

(T. R. 50–25)

		Paragraphs
SECTION I.	Requirements of good bayonet work	484
II.	Special features of bayonet training	489
III.	Bayonet training and combat practice in detail	492
IV.	The qualification course	528
V.	Qualification orders and insignia	534
VI.	Records and reports	538
VII.	Suggestions for instructors	541
VIII.	Equipment	548

SECTION I

REQUIREMENTS OF GOOD BAYONET WORK

484. *The spirit of the bayonet.—a.* It is an easy matter to teach the few simple technical details of bayonet combat, but an instructor's success will be measured by his ability to instill in his men the will to use the bayonet. This spirit is infinitely more than that displayed on the athletic field, and combined with confidence in the rifle and ability to shoot constitutes the grim determination of the firing line to close with and destroy the enemy. It is the overwhelming impulse behind every successful bayonet assault.

b. The fighting instinct of the individual soldier must be developed to its highest point by the instructor. It first appears in a recruit when he begins to handle the bayonet with facility, and increases as his confidence grows. With the mastering of his weapon there comes to him a sense of personal fighting superiority in physical conflict. He knows that he

can fight and win. His practice becomes snappy and full of strength. Such a man will fight as he has trained—spiritedly and effectively. While waiting for the zero hour he will not fidget nervously. He will go over the top and win.

c. Successful training implies that men will use on the battle field what they have learned on the drill ground. To do this, a man must move to the attack possessed not only of a determination to win, but also of a perfect confidence in his primary arm—the rifle. Without this, a bayonet assault will fail. The man who bores in at a dead run enjoys the advantage of a superior morale. The man who waits to fence loses his own nerve and helps the enemy take heart. The enemy may have the longer weapon. In that case, the soldier gains the advantage by closing with his opponent but gives his opponent the advantage if he stands off and fences.

d. The growth of the spirit of the bayonet is fostered by short talks on what has already been accomplished with the bayonet.

e. The bayonet is the ultimate factor in every assault and the soldier must realize that its successful employment requires of him not only individual physical courage, but also perfect discipline and a thorough knowledge of teamwork. In a bayonet fight, the nerviest, best disciplined, and most skillful man wins—the will to use the bayonet and thorough training assure success.

485. *Continuous training.*—The perfect confidence of the soldier in his weapon is born only of thorough, constant practice, which is the very essence of bayonet training.

486. *Development of the individual.*—*a.* It is vital that each man be taught to think and act for himself, and that there be no interval of time between the thinking and acting. To attain this end, the men are made to use their brains and eyes to the fullest extent by carrying out the practices, so far as possible, without words of command. The instructor will cause them to parry sticks, to thrust at a shifting target as soon as it is stationary, etc. In this phase of the training, the class should always work in pairs and act on the principle of master and pupil alternately. This, in itself, tends to develop individuality and confidence. Sharp, jerky words of command produce mechanical movements of the piece and should be used as little as possible. Rapidity of movement and alertness of mind are taught by various quickening exercises and games which require quick thinking and instantaneous muscular response. Boxing, wrestling, and all kinds of rough-and-tumble fighting play an

important rôle in the development of the individual, and may well go hand in hand with bayonet training.

b. To attack effectively with the bayonet requires nerve, good direction, strength, and quickness during a state of extreme excitement and probable physical exhaustion. In view of this fact, the soldier must be brought to the highest state of physical development and kept in that condition.

In order to encourage dash and gradually strengthen the leg muscles, all classes should be practiced from the beginning of the training in charging short distances, jumping trenches and hurdles and jumping in and vaulting out of trenches.

487. *Bayonet an offensive weapon.*—It must always be remembered that the bayonet is essentially an offensive weapon. Rush straight at an opponent with the point threatening his throat and deliver the thrust wherever an opening presents itself. If no opening is obvious, one must be made by deflecting the opponent's piece or by threatening him on one side and driving in on the other. But keep boring in. The man who fails to get his thrust home when an opening presents itself for even one-fifth of a second may lose his life.

In a bayonet assault, all must go forward with a determination to win.

488. *Teamwork.*—*a.* While actual bayonet combat is individual, each man must understand from the very first that he is fighting for his side and not for himself alone. It follows, therefore, that he must be familiar with the tactical employment of the bayonet. He must know not only how, but when and when not to use it. For instance, it is absurd for a bayonet man to chase a retreating enemy and stab him in the back; he has a bullet in his rifle for just that situation. Again, the man who, forgetting that he is only a member of the team, rushes far ahead of his comrades is always needlessly killed, thus helping the enemy and wasting his own life. Perfect teamwork is required in the bayonet attack.

b. In both stabilized and mobile situations the bayonet man is frequently called upon to act as protector to his constant comrade, the grenade thrower. This requires that the bayonet man be familiar with the tactics of both the bayonet and the grenade in mopping-up parties, raids in either stabilized or mobile situations, in advancing through shell holes, and in assaulting waves.

c. The supreme test of a soldier's training is to demand of him that he hold a position at the point of the bayonet. In such cases, he must know just how to coordinate the bayonet

with the other infantry weapons. He must know just what kind of a counterattack to make and exactly when to start it.

d. Finally, there is for the instructor to consider the close relation between controlled rifle fire and the bayonet, which should be the most important phase of bayonet training.

SECTION II

SPECIAL FEATURES OF BAYONET TRAINING

489. *Signals.—a.* The system of training herein prescribed is based on the direct appeal to the pupil's brain through his eye. In practicing the various movements, the use of signals should be started as early as practicable. Their object is to train the men to see and avail themselves instantly of openings, thus coordinating the eye with the muscles. The signals were devised to supersede the vicious practice of turning bayonet work into a drill by the use of commands, which ignores the training of the soldier's eye and deadens his initiative.

These signals are not mere imitations of the movements they call for; imitations would be of little advantage to the pupil. The idea is to indicate with the master's hand an opening which the pupil perceives and acts upon.

b. The signals, easily learned, will be used by the men working in pairs—one signaling, the other executing the movement called for.

To signal for the following positions or movements, the master will move as indicated:

(1) *Guard.*—Assume the position of guard, left hand at back, right elbow at side, right forearm pointing to front, fist closed.

(2) *Short guard.*—Same as guard, except that the arm is drawn straight to the rear until the fist is at the right side.

(3) *Long thrust.*—Clap the right palm, fingers apart and extended, to that part of the body toward which the soldier is to aim.

(4) *Short thrust.*—Same as long thrust, except that the fist is closed. If the man with the bayonet is not in the position of short guard or withdrawal from long thrust when he gets the signal, he comes to the position of short guard and executes short thrust.

(5) *Jab.*—Place both closed fists under the chin.

(6) *Parry.*—Strike a blow diagonally across the body in the direction in which the parry is to be made, fist closed. Follow by signal for thrust.

(7) *Vertical butt strokes.*

(*a*) Make an upper cut with right fist to indicate vertical butt stroke No. 1.

(*b*) A straight right from the shoulder for No. 2.

(*c*) For the slash following butt stroke No. 2, carry the right hand upward and over the left shoulder, fingers extended and joined, and slash downward.

(*d*) Deliver an over-arm blow to indicate the butt stroke following the slash.

(8) *Horizontal butt strokes.*

(*a*) Make a right hook to indicate a horizontal butt stroke.

(*b*) Carry the right hand over the left shoulder, fingers extended and joined, and slash horizontally toward the right to indicate the slash following the horizontal butt stroke.

(9) *Disengage.*—Describe an arc downward and forward with the right hand, fingers extended and joined, in the direction the disengage is to be made. Follow by signal for thrust.

(10) *Cut-over.*—Describe an arc upward and forward as above.

490. *Master and pupil practice.*—*a.* Whether working with the training stick or by the signals, the vigor and spirit of the master will be reflected in the work of the pupil with the bayonet. In handling the training stick or making the signals, the master must be speedy and aggressive and encourage his pupil to attack in the most determined and offensive manner. The same desire to win that makes the soldier close with his enemy in actual combat must drive the bayonet fighter at the training stick or the target indicated by the master's signal. In addition, the master will be constantly on the alert to detect and correct the errors of the pupil.

b. In executing the movements by the signals, the point of the bayonet will follow the movement of the master's hand regardless of the relative right or left. When the proper execution of a movement requires that the pupil advance, the master will step to the rear quickly as he gives the signal in order that his pupil may move with the utmost freedom and vigor.

491. *General rules for bayonet training.*—*a.* Scabbards will not be removed from the bayonet except for thrusting at dummies and practice at withdrawal boards.

b. The guard, thrusts, withdrawals, parries, and the jab will be taught first with the left then the right foot forward. Later the men will learn to handle the rifle and bayonet both right-handed and left-handed.

c. All of the positions and movements will be taught right-handed before any left-handed practice is allowed.

d. The short thrust and jab naturally follow the long thrust in the sequence named. When executing these three movements in rapid succession, the withdrawal position after a long thrust is the starting position for a short thrust, and the withdrawal position after a short thrust is the starting position for a jab.

e. When practicing long thrust or short thrust alone, the rifle is snapped back to guard from the withdrawal position.

f. The withdrawal, once taught, will be made after every thrust.

g. Ranks working together will always be far enough apart to prevent accidents when thrusts are being made. When thrusts are made advancing, the ranks will change positions by coming to high port, marching in double time past each other, and turning about. When working against dummies, men will always continue the movement past the dummies, which they will leave on their right.

h. A target at which to thrust will always be clearly marked on all dummies.

Section III

BAYONET TRAINING AND COMBAT PRACTICE IN DETAIL

492. *Vulnerable parts of the body.*—The point of the bayonet should be directed against the opponent's throat, especially in hand-to-hand fighting, so that the point will enter easily and make a fatal wound on penetrating a few inches. Other vulnerable and frequently exposed parts are the face, chest, lower abdomen, thighs, and, when the back is turned, the kidneys. The armpit, which may be reached with a jab, if the throat is protected, is vulnerable because it contains large blood vessels and a nerve center.

Four to six inches penetration is enough to incapacitate and allow a quick withdrawal, whereas if a bayonet is driven home too far it is often impossible to withdraw it. In such cases, a round must be fired to break up the obstruction.

493. *Guard.—a. Description of position.*—The point of the bayonet is directed at the base of the opponent's throat, the rifle held firmly but not rigidly with both hands without canting. The left hand, palm against the side of the rifle, is at the most convenient position in front of the rear sight so that the left arm is only slightly bent, the right hand, palm to

the left, grasping the small of the stock and the right forearm pressing the upper part of the butt to the body. The legs are separated as in taking a natural step and meeting with resistance; left foot leading, both knees slightly bent, the leading knee the more; feet separated laterally a few inches and both feet flat on the ground, toes pointed as the man naturally points them in walking. The weight is balanced on both legs.



PLATE 1.—Guard

The position must not be constrained in any way, but must be one of agressiveness, alertness, and readiness to spring forward for instant attack. (Pl. 1.)

b. Common faults.

(1) Body inclined backward.

(2) Left arm too straight or bent too much.

(3) Right hand held too low and too far back.

(4) Rifle gripped too rigidly, restraining all freedom of motion.

494. *Short guard.*—The left hand grasps the rifle just under the stacking swivel, left arm slightly bent, right hand grasping the small of the stock and resting against the right hip. The



PLATE 2.—Rest

point of the bayonet is directed at the base of the opponent's throat. The body, legs, and feet are as in guard.

495. *Rest.*—To assume the position of rest from guard, lower the piece smartly to the side, butt resting on the ground near the right foot, the right hand grasping the piece above the lower band. The feet remain as in the position of guard. (Pl. 2.)

496. *High port.—a.* From the position of guard, without changing the grasp of the hands, carry the piece diagonally across the body until the left wrist is level with and in front of the left shoulder.



PLATE 3.—High port

b. The high port is adopted only when actually preparing to assault. At other times the rifle is carried on the shoulder, at the trail, or slung, according to circumstances. (Pl. 3.)

497. *Jumping trenches.—a. Jumping into a trench.*—In jumping into a trench the piece will be carried in both hands with the bayonet pointing down and to the left, the point of the bayonet being allowed to enter the ground an inch or two as the soldier alights in the trench. The bayonet must point in close to the man jumping in order to avoid injury to the man on his left.

b. Jumping out of a trench.—In preparing to assault from a trench, the bayonet fighter crouches low and close to the parapet, piece grasped in either hand, bayonet pointing up, the other hand grasping the edge of the trench. At the moment of springing out, the rifle is swung up and over the parapet, the bayonet fighter vaulting out assisted by the hand grasping the edge of the trench. While crouching in the trench no part of the head, hand, or the bayonet must be exposed above the trench.

c. Jumping over trenches in an assault.—Jumping trenches and surmounting obstacles will usually be done by throwing the piece sharply forward and upward from the high port on taking off and bringing it back in on landing. This jumping will also be practiced with the position of the piece approximately maintained with the left hand alone, leaving the right hand free. The men will also be trained to jump holding the rifle in the guard position and snapping it up quickly on taking off. The grasp of the hands remains the same, and the piece is started down when the man is at the highest point in his jump, thus bringing him down in a good position for thrusting. These jumps apply the principle of jumping with weights.

498. *Long thrust.—a. Description of movement.*—The rifle is gripped with all possible strength and the point is driven vigorously from the guard position to the full extent of the left arm, quickly extending the whole body to the front, butt running along the inside of and against the right forearm. In delivering the thrust, the right elbow is carried low and the butt remains between the right forearm and the body. The leading knee and ankle are well bent, the rear leg braced with the heel raised, the body inclined well forward.

The power of the thrust comes from the right arm, the shoulders, the back, the legs, and weight of the body. The left arm is used more to direct the point of the bayonet. A vigorous thrust delivered without advancing throws a man off balance, but in fighting he preserves his balance by stepping in with the rear foot as he thrusts. After a man has learned the details of

a thrust, it will always be delivered while advancing. The eyes must be fixed on the object at which the thrust is made. In making thrusts other than straight to the front, the leading foot should move laterally in the direction in which the thrust is made.

The long thrust is made at an opponent at a range of 5 feet from the attacker's eye. It is very important to be able to judge this distance. In advancing on a dummy, men are prone to let the momentum of the body carry the point through the dummy without making the thrust. This must be guarded against, as it brings the point forward at the same rate of speed as the body, which is fairly uniform and easily judged. The



PLATE 4.—Long thrust.

darting forward of the point at the last instant gives a speed that is more difficult to judge. (Pl. 4.)

b. Common faults.—The following faults should be guarded against in executing long thrust:

(1) Rifle drawn back just before delivering the thrust.

(2) Elbow and butt of the rifle held as high as or against the right shoulder.

(3) Eyes not directed at the point thrust at.

(4) Leading knee not sufficiently bent.

(5) Body not inclined far enough forward.

(6) Point not going forward on a straight line.

(7) Butt not braced against the inside of the right forearm.

(8) Thrust made with the arms alone and not with the power of the whole body.

499. *Withdrawal from long thrust.—a. Description of withdrawal.*—To withdraw the bayonet after a long thrust has been delivered, the left hand is slipped toward the stacking swivel, the rifle is jerked straight back along the line of penetration with the force and weight of the entire body until the right hand is behind the hip, this without unduly relaxing the grip of the small of the stock, and the guard position is immediately resumed.

The weight of the body is carried to the rear by straightening out the leading leg and straightening the body at the waist. The foot in rear will be advanced quickly as the left hand is slipped forward unless the proximity to the object transfixed renders it unnecessary. After every thrust, a rapid withdrawal is made before coming to guard. In combat, a quick withdrawal is necessary to get ready to meet another enemy, and to prevent the one just stuck from wrenching the rifle from the bayonet fighter's hands in falling. (Pl. 5.)

b. Common faults.—The following common faults should be guarded against in the execution of withdrawal from long thrust:

(1) Not making the withdrawal vigorously enough.

(2) Not drawing bayonet back on line of penetration; i. e., letting the butt drop.

500. *Long thrust at changing targets.*—The class, working in pairs, with the instructor supervising, will be practiced without word of command in thrusting at various directions, e. g.:

a. At the opposite man's hand, which is placed in various positions on the body.

b. At thrusting rings on the ends of training sticks.

501. *Long thrust at disks on dummies.—a.* The men will be taught to transfix a disk or circle painted on a dummy, first from a halt at a distance of about 5 feet from the dummy—i. e., extreme range of the bayonet—and then, after advancing 3 or more paces. Later, the distance and speed are increased as the men progress. The advance must be made in a practical and natural way, and will be practiced with either foot to the front when the thrust is delivered. The rifle will not be drawn back just before making a thrust in a forward movement. The impetus of the body and the forward stretching of the arms supply the maximum force.

The bayonet must be withdrawn immediately after the thrust has been delivered and a forward threatening attitude assumed to the side of or beyond the dummy.

Unless the rifle is firmly gripped, it is liable to injure the hand. By gripping the rifle as far back on the small of the stock as the comb permits, the forefinger will be saved from being cut by the trigger guard.



PLATE 5.—Withdrawal from long thrust

b. To guard against accidents, the men will be at least 5 feet apart when the practice is carried out collectively.

c. The principles of this practice will be observed while thrusting at dummies in trenches, standing upright on the

ground, or suspended from gallows. They should be applied at first slowly and deliberately, for no attempt must be made to carry out the assault training before the men have been carefully instructed in and have thoroughly mastered the preliminary lessons. (Pls. 6 and 7.)

502. *Short thrust.—a.* If at the position of guard, short guard is assumed by shifting the left hand quickly toward the

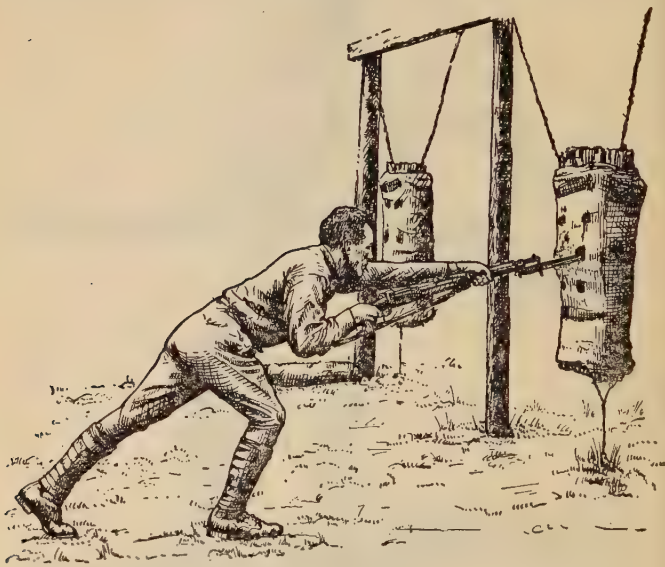


PLATE 6.—Long thrust at swinging dummy

muzzle and drawing the rifle back until the right hand is against the right hip, this without unduly relaxing the grasp of the small of the stock, the butt either upward or downward, according as a low or a high thrust is to be made; then deliver the thrust vigorously to the full extent of the left arm, as in long thrust.

When immediately preceded by a long thrust, the short thrust is delivered from the position of withdrawal from long thrust.

b. The short thrust is used at a range of about 3 feet, and in close fighting it is the natural thrust made when the bayonet has just been withdrawn after a long thrust. (Pl. 8.)



PLATE 7.—Withdrawal from long thrust at prone dummy

503. *Withdrawal from short thrust.*—Withdrawal from short thrust will be practiced in two ways—

a. In the same manner as withdrawal from long thrust.

b. If a strong withdrawal is necessary or the short thrust is to be followed immediately by the jab, the right hand is slipped up in rear of the left hand after the short thrust has been made. (Pl. 9.)

504. *Short thrust at changing targets and at dummies.*—The principles of delivering the long thrust at changing targets and at dummies will be observed in so far as they apply. By placing two or more disks or circles on the dummies, the short thrust may be taught in conjunction with the long thrust, the first disk being transfixed with the long, the second with the short thrust. This will also be practiced by delivering a long thrust advancing at a prone dummy and immediately following



PLATE 8.—Short thrust

the withdrawal with a short thrust at an adjacent swinging dummy.

505. *The jab.—a. Description of movement.*—Immediately following the withdrawal from short thrust the rifle is brought to an almost vertical position, close to the body, along the outside of the right leg, butt near the right foot. From this position, stepping in if necessary, the knees are bent and, with the full force of the body, the point of the bayonet is jabbed upward into the throat or other part of the opponent. After any move that carries the point beyond the enemy, the bayonet fighter comes immediately to the short thrust or jab position; that is, keeps the point between himself and his enemy. (Pls. 10 and 11.)

b. Common faults.—The following common faults should be guarded against in executing the jab:

(1) Rifle drawn backward and not held upright enough.

(2) Rifle grasped too low with the right hand.

(3) All the work done with the arms without putting the whole body into it.



PLATE 9.—Withdrawal from short thrust

(4) Rifle not pressed against the leg.

(5) Jab to high and not vigorous enough.

506. *Parry right (left).—a. Description of the parries.*—From the position of guard, the body is forced forward to the full extent of the reach and the left arm is straightened vigorously without bending the wrists or twisting the rifle in the hands, at the same time engaging the opponent's piece and

deflecting it just clear of the body. The barrel is kept up, the point threatening the opponent's body, preferably his throat. If the parry right is properly made, it is easy to kill the opponent with the thrust which immediately follows. In fact, the

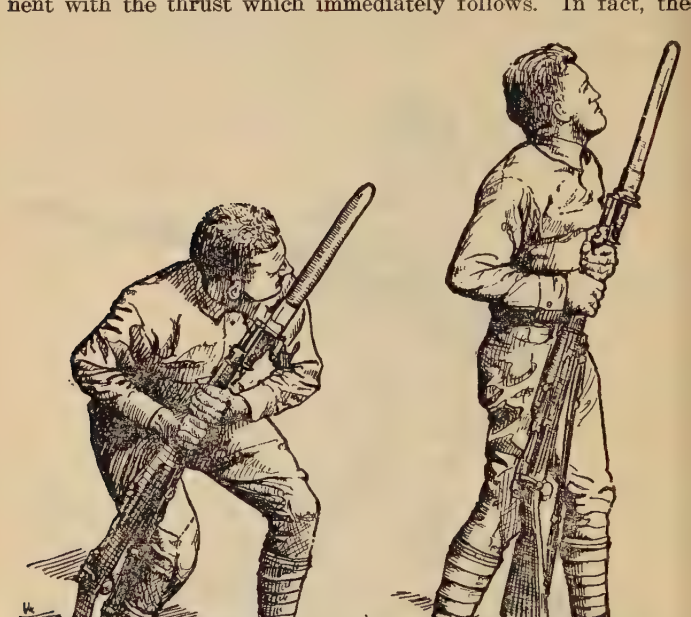


PLATE 10.—The jab.

opponent will usually impale himself on the point. In parry left, the point is carried out of line with the opponent's body, but can be brought back quickly as it is nearer this line than the opponent's point. Parry left is followed up at once either

with a thrust or a butt stroke to the ribs or jaw. During the parry, the eyes must be kept on the weapon being parried, but having completed the parry are instantly fixed on the part of the opponent's body to be attacked.

Emphasis will be laid on the forward movement of the rifle and body. Very little lateral movement of the rifle is necessary

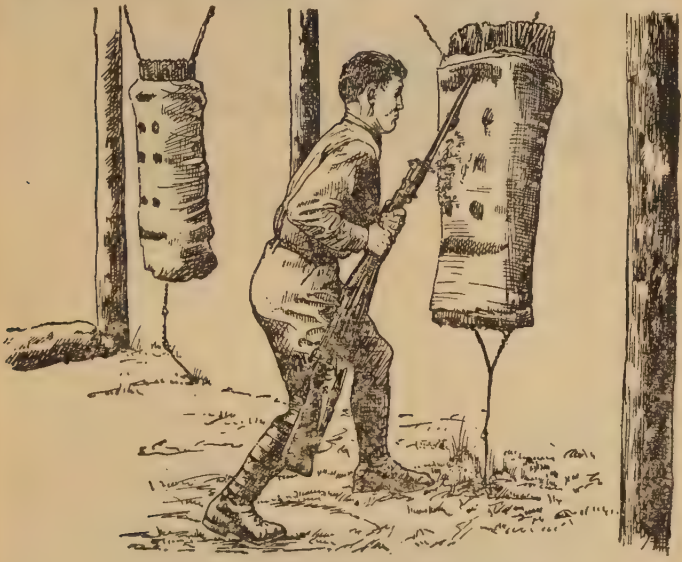


PLATE 11.—The jab at swinging dummy

in order to deflect the point of the opponent's bayonet enough to permit driving home a thrust.

Men will be taught to regard the parry as an offensive movement and so execute it. (Pls. 12–A, 12–B, 12–C, and 12–D.)

b. Common faults.—The following common faults should be guarded against in the execution of the parry:

(1) Wide sweeping parry with no forward movement in it.

(2) Eyes taken off the weapon being parried.



PLATE 12–A.—Parry right



PLATE 12–B.—Low parry right



PLATE 12–C.—Parry left



PLATE 12–D.—Low parry left

(3) Making the arms do all the work and not getting the weight, strength, and momentum of the body into the parry.

(4) Lack of force in the parry.

507. *Parrying the training stick.*—*a.* The class will work in pairs. One man thrusts with the padded end of the training stick and the other parries. The guard position is resumed after each parry. Later, the man with the rifle advances as he parries, executes a long thrust followed by a withdrawal and resumes the position of guard. At first, this practice must be slow and deliberate without being mechanical. It should be increased in rapidity and vigor as the instruction progresses. Care will be taken that the man thrusting with the stick does not swing it into the man with the rifle. If sweeping movements are made with the stick, the man with the rifle will probably develop sweeping parries. (Pls. 13–A and 13–B.)

b. The men will also be taught to parry thrusts made at them with the training sticks—

(1) By an enemy in a trench when they are themselves on the parapet.

(2) By an enemy on the parapet when they are in the trench.

(3) When both are fighting on the same level at close quarters in a deep trench.

c. Training sticks long enough to represent the opponent's weapon in the guard position should be attached to the dummies. The training stick is run through a small ring attached to either side of the dummy and is held loosely in place by a man in rear of the dummy. The bayonet man, advancing, parries the training stick and delivers a long thrust at the dummy.

508. *Fending off.*—Practice will also be given in fending off the opponent's point with either bayonet or rifle in any position, such as guard, short guard, and the position for delivering a jab.

509. *Methods of injuring an opponent.*—It should be impressed upon all that, although a man's thrust has missed or has been parried, or his bayonet has been broken, he can, as attacker, still maintain his advantage and injure his opponent.

In individual fighting in the open, the butt can be swung horizontally against the opponent's jaw or other vulnerable parts. This method is impossible in trench fighting or in an attack, owing to the horizontal sweep of the bayonet to the attacker's left. Here the butt must be swung in the vertical plane. In many instances, a kick to kneecap or crotch will aid the butt stroke. A butt stroke or kick will only temporarily disable an enemy, and it should be clearly understood that the

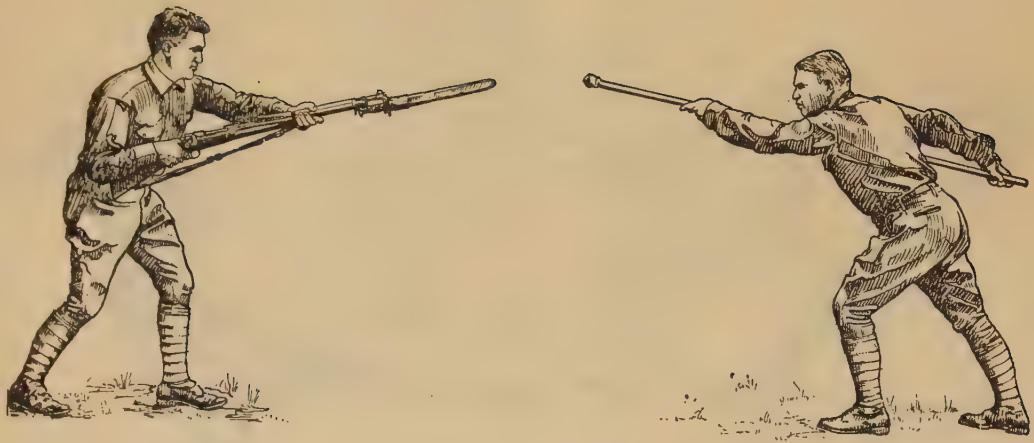


PLATE 13–A.—Parrying the training stick

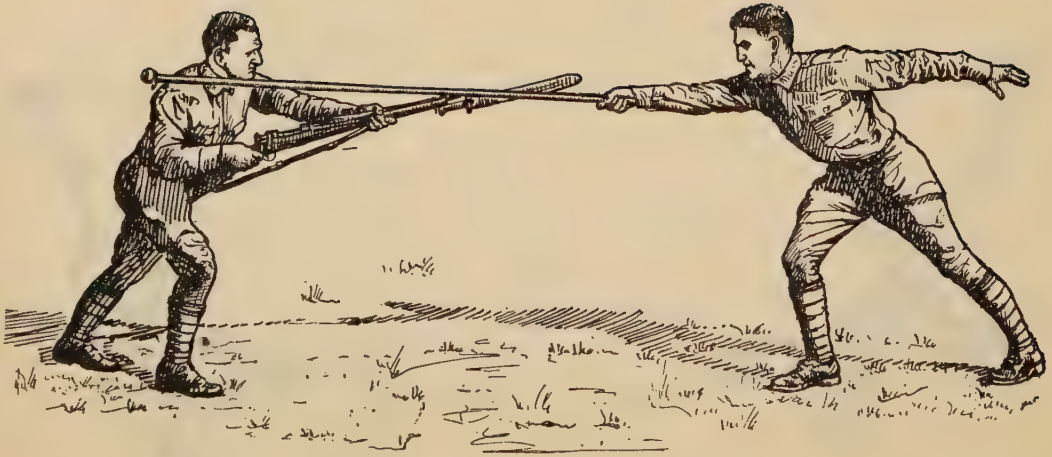


PLATE 13–B.—Parrying the training stick

butt must not be employed when it is possible to use the point of the bayonet effectively.

510. *Trench or vertical butt strokes.—a. Butt stroke No. 1.*—Swing up the butt at the opponent's crotch, ribs, forearm, or any exposed part of the body, using a half-arm blow, advancing with the rear foot.

b. Butt stroke No. 2.—If the opponent jumps back so that the first butt stroke misses, the rifle will come into a horizontal



PLATE 14.—Vertical butt stroke No. 1

position over the left shoulder, butt leading. The attacker will then jump in and dash the butt into his opponent's face.

c. Slash.—If the opponent retires still further out of range, the attacker again closes up and slashes his bayonet down on the opponent's head, or the neck if the opponent is wearing a steel helmet. In the event of missing, he will then be in the guard position.

d. Butt stroke No. 3.—If the point is beaten or brought down, the butt can be used effectively by crashing it down on the

opponent's head with an over-arm blow, advancing the rear foot. When the opponent is out of distance, the slash can again be used. The attacker will then be in the guard position. (Pls. 14 and 15.)

511. *Open ground or horizontal butt strokes.—a. Butt stroke No. 1.*—With a half-arm blow swing the butt up at opponent's jaw, advancing the rear foot.



PLATE 15.—Vertical butt stroke No. 1

b. Butt stroke No. 2.—The butt can now be dashed into the opponent's face as described under vertical butt stroke No. 2 above.

c. Slash.—If the opponent jumps back so that the first stroke misses, the rifle will come into horizontal position over the left shoulder, butt leading. The attacker will then step in with the rear foot and slash the bayonet against the opponent's head or neck. If the opponent retires farther out of range, the attacker will be in the guard position. (Pl. 16.)

512. *Other phases of in-fighting.*—Butt strokes can only be used in certain circumstances and positions, but if men acquire absolute control of their weapons under these conditions, they will be able to adapt themselves to all other phases of in-fighting. For instance, when a man is gripped by an opponent so that neither the point nor the butt can be used, the knee brought up against the crotch or the heel stamped on the instep may momentarily disable him and make him release his hold.



PLATE 16.—Horizontal butt stroke No. 1

513. *Close fighting methods against dummies.*—When the class has been shown the methods of using the kick, the rifle butt, and the knee, they should be practiced against one or more dummies, combining them with the thrusts and the jab, e. g., advancing, use the heel on a prone dummy, deliver a thrust at a swinging dummy, the knee or butt against another fixed close to or on the ground, and so on in varied methods of attack. In order to avoid damaging it, light dummies should be used for practice with the butt.

514. *To disarm an opponent.*—*a.* Fend off opponent's thrust with the right hand. Step forward and seize his left hand with both hands, the left under his palm, the right over his fingers. Give a sharp twist outward.

b. Fend off opponent's thrust with the right hand. Step in and seize his left wrist firmly with the right hand; grasp the rifle just below the bayonet with the left hand, back of the hand down, and swing it violently upward and over to the right, at the same time stepping in and kicking or bringing the left knee into the lower part of the opponent's body.

c. Fend off opponent's thrust with the left hand; step in and kick him in the crotch or on the shin. Grasp the rifle just below the bayonet with the right hand, back of hand down, and swing it upward and over to the left; force the point of the bayonet to the ground, and, stepping in, back-heel the opponent.

515. *Obtaining good direction and quickness with the training stick.*—*a.* The men work in pairs as master and pupil, the pupil with the rifle in the guard position and the master with the training stick. As the master approaches and places the ring or padded end of the training stick on the ground near the pupil with the rifle in the guard position and the master with his point as long as he is sufficiently near to attack. The master then offers the ring or padded end of the stick in varying positions—

(1) If the ring is presented, the pupil attacks with a thrust or the jab as the distance between his point and the stick indicates. If the ring is holed, the withdrawal is made and the position of guard resumed. If the first effort is a miss, the pupil will come on with short thrust and jab until successful.

(2) If the master presents the padded end of the stick, the pupil makes butt stroke No. 1 at it. If this is a miss, he comes on with butt stroke No. 2, etc., until he hits the padded end. As soon as he hits it, he resumes the guard. To practice the pupil in all the butt strokes, the master jerks the stick away a short distance just before butt stroke No. 1 hits it, causing the pupil to miss and come on with butt stroke No. 2. Just before butt stroke No. 2 hits the stick the master again jerks it away, causing the pupil to miss and come on with the slash.

(3) If the padded end of the stick is thrust at the man with the bayonet, he parries as described in paragraph 24.

b. At the command FORM CIRCLE the pupils, not more than 10 in number, form in a circle, facing the instructor with an interval of about 3 paces, at the position of guard. The instructor offers the ring or padded end of the training stick in



PLATE 17–A.—Attacking the training stick

varying order to the pupils who attack as laid down in subparagraph *a*. This circle may also be formed with the pupils facing outward. At a touch from the training stick, the pupil whirls about and attacks as before. (Pls. 17–A, 17–B, and 17–C.)

516. *Hand parries.*—In order to impress on the pupil the necessity of a strong withdrawal from long thrust and short thrust and to cause him to impart a powerful movement to the jab, the following exercise will be carried out with the men



PLATE 17–B.—Long thrust at the training stick

working in pairs as master and pupil, the master unarmed and the pupil with rifle and bayonet:

a. At a hand signal made by the master, the pupil delivers a long thrust advancing; the master steps back and with the free hand fends the thrust, grabs and holds the bayonet to give the pupil's withdrawal the necessary resistance.

b. At a second signal, the attack is continued with the short thrust, the retreat and fend being repeated by the master. In fending the thrusts, the master quickly pushes the bayonet outside the line of his body, immediately grabs it with both hands, and offers the necessary resistance as stated above. (Pl. 18.)

517. *Assault practice.*—This practice will approximate as nearly as possible the conditions of actual fighting, and will not be undertaken until the men have received thorough preliminary training and have acquired complete control of their weapons.

a. In any assault, the attackers are necessarily subjected to severe physical exertion as well as to great nervous tension,



PLATE 17–C.—Jab at the training stick

while the defenders are comparatively fresh. Therefore, quick aim and good direction with the bayonet when attacking, while moving rapidly or surmounting obstacles, accurate and vigorous delivery of the thrust, and clean, quick withdrawals are of the greatest importance, and need the same careful attention and constant practice as are devoted to obtaining efficiency in shooting the rifle.

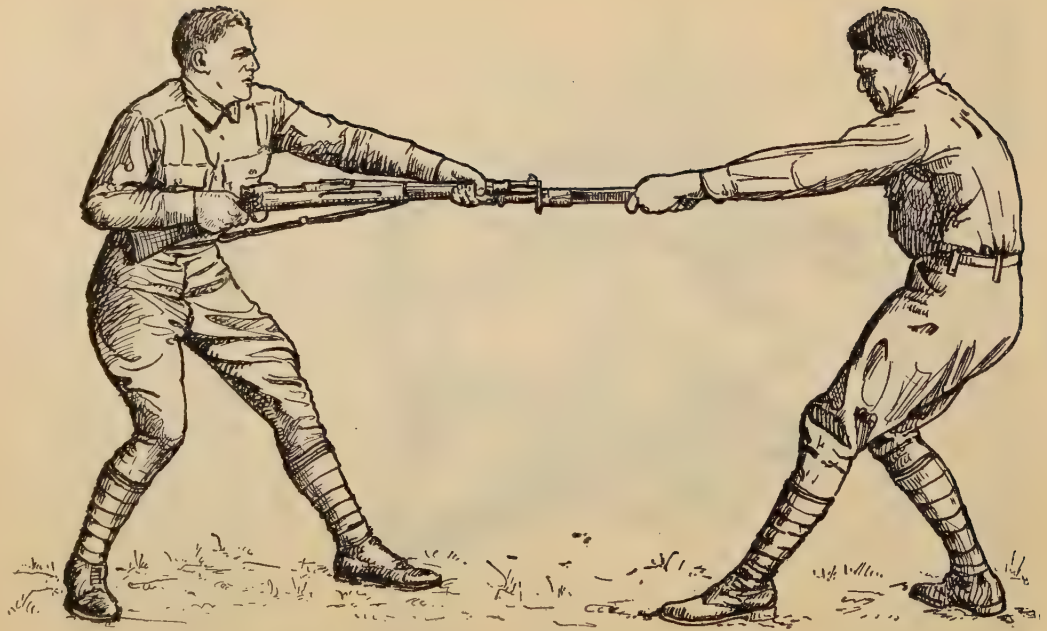


PLATE 18.—Resisting withdrawal from long thrust

In the assault practice the charge brings the man to the first "enemy" in a comparatively breathless condition, and the accuracy of the aim is tested by the disk, which can only be transfixed by a true and vigorous thrust.

b. For this practice, the men will be made to begin the assault from a trench, 6 or 7 feet deep, as well as from the open.

518. *Thench system for assault practice.*—A labyrinth of trenches, with dummies in varying positions with shell holes and obstacles of various sorts between the trenches, forms an excellent assault practice course. Assaults should be made from all four sides in order to give variety. The edges of the trenches should be protected by spars or balks anchored back, otherwise constant use will soon wear them out. Cinders scattered over the course will prevent the men from slipping. If gallows can not be erected, sack dummies should be placed on tripods or on end, as well as lying in trenches or on the parapet, with soft earth, free from stones, under them.

519. *Combined tactics.*—A combined bullet and bayonet course may be had by placing stationary or disappearing silhouette targets at a suitable distance from the end of the assault course, and causing the attackers to open fire upon them from a position in a trench or in the open at the finish of the bayonet assault. The ingenious instructor can arrange some very interesting and practical exercises by combining the tactics of the bayonet assault with those of other branches of infantry training.

520. *Wooden-rifle combat.*—Wooden-rifle combat, like boxing and wrestling, introduces into the training the most important element of personal contact, without which the true fighting spirit can not be properly developed. The work with the wooden rifles is very slow and easy at first, the men gradually working up speed until they come together at full tilt. Gloves, masks, and plastrons will always be worn, and the instructor will be responsible for the prevention of serious accidents. Men begin this combat practice with both standing still; then one advances at a walk while the other stands still; then both advance at a walk; then one man advances at a run while the other stands still, and, finally, both men advance at a run.

521. *Success in wooden-rifle combat.*—*a.* The soldier will win consistently in wood-rifle combat only as he has developed aggressiveness, skill, and speed through long and continuous training. In particular, the ability to score hits over an opponent will depend upon a lightninglike parry and thrust; upon the effective handling of the wooden rifle in close body-to-body

fighting; and upon the ability to see and avail himself quickly of any opening offered by his opponent.

b. In addition, the successful attack in individual combat is the one which most effectively conceals from the opponent the intended point of attack by the use of various feints, e. eg.:

(1) *Disengage.*—If the opponent's point is held high, drop the point of the bayonet slightly with the left hand and bring it up on the opposite side of opponent's piece, coming in at the same time. The point should go forward about a foot in the act of passing under the enemy rifle.

(2) *Cutover.*—If the opponent's point is held low, bring the piece to the opposite side by passing it over his.

(3) *Cross step.*—In charging in on an opponent, cross the rear foot over the leading one just before reaching effective range with the bayonet (i. e., 5 feet), thereby attacking him from one side or the other instead of directly from the front. This maneuver is similar to that of an open-field runner in football avoiding a tackler.

c. Footwork.—The men will be given practice in advancing and closing rapidly with an enemy; in moving quickly short distances to either side and in dodging. However, the instructor must make certain that the instinct to close instantly with one's enemy is developed through these practices and that the bayonet fighter does not hold off and fence with his opponent.

522. *Combat practice—rushing.*—Two men will place themselves 20 yards apart, each at the guard position. At signal, they charge each other. Unless a clean, hard hit is made in 20 seconds, they will be separated and a hit counted against each. Men should never be allowed to fight for more than one hit in any assault.

The men should be encouraged to hold the piece at the short guard. This compels in-fighting.

523. *Common faults.*—All tendencies to wildness will be rigorously checked. If during the rushing there appear any of the following mistakes, men who commit the errors are taken out and the instructor works with them individually until they recover their form:

a. Flagrant loss of aim or balance.
b. Light tapping touches.
c. Hitting with side of the bayonet.
d. Pushing with the rifle.
e. Useless parries or movements of the rifle.
f. Slowing up just before the shock.

524. *Rushing in groups.*—*a.* Let one man receive the assault of two or three others, placed one behind the other at 10 or 15 pace distance.

b. Let one man receive the assault of two others at 6-pace interval, converging upon his flank at 20-pace distance.

c. Let one man receive the assault of two others at 6-pace interval, converging upon him as they come.

d. Have men fight when one is in the trench and one on the parapet, and when both men are in a narrow trench.

e. Vary these formations in any way that may appear valuable and instructive.

525. *Team fighting.*—After the men have attained proficiency in individual combat, squad will be opposed to squad and platoon against platoon, as in paragraph 517, men being substituted for dummies.

526. *Trench combat.*—In trench combat, when the soldier comes to a turn in the trench, he makes a quick vault around the corner of the trench. As he lands, he has the rifle in the guard position (on the right side if the trench turned to the left; on the left side if it turned to the right) ready to beat the opponent's weapon aside or make a quick thrust. There is nothing to be gained by looking first, as it insures the enemy being ready. If a place is encountered along where one trench crosses another about at right angles, it is well to look first, as one man has no show if there is an enemy on each side of the entrance. If the soldier finds one side clear, he vaults into the other without delaying to look. If two men approach such a trench, they approach as nearly on a line as the width of the trench will permit. One vaults to the right and the other to the left without stopping to find out first whether the trench is occupied.

527. *Problems in wooden-rifle combat.*—Any number of excellent combined problems may be worked out with wooden-rifle combat equipment. In the solution of these problems a trench system must be had, umpires used, and it will often be necessary to arrange distinguishing marks for opposing sides. The following are some that will prove particularly interesting and instructive:

a. A detachment of Reds is ordered to attack a certain point in a quiet Blue front-line trench and capture one or more prisoners.

b. The conduct of Red detachment while driving a Blue detachment down Blue's communication trench to his second-line trench.

c. A Red patrol, equipped with bayonets and grenades, in no man's land at night, unexpectedly encounters a Blue patrol.

d. Reds have assaulted and taken a Blue position, and are engaged in consolidating it when Blues counterattack.

(1) Reds have plenty of ammunition.

(2) Reds have no ammunition.

NOTE.—Reds may or may not have automatic rifle.)

e. Defending Reds to meet assaulting Blues with a countercharge.

SECTION IV

THE QUALIFICATION COURSE

528. *General provisions.—a. Object.*—The object of the qualification course is to establish a standard performance which approaches, in its demands upon the soldier's speed, accuracy, strength, and endurance, the demands made by actual bayonet combat, and which will serve as a measure of proficiency in handling the rifle and bayonet. The course brings out the use of the principal offensive movements of bayonet fighting under varying conditions. Good form is required to pierce the disks on the dummies while moving rapidly, and to execute the withdrawals properly. Good physical condition is a requisite in order to complete the course within the time limit without loss of form and accuracy.

b. Practice seasons.—The period of regular practice season is designated by the corps area or department commander upon the recommendation of the post commander. Only one trial for qualification by any one individual will be permitted in this season.

The period of supplementary season is designated by the post or regimental commander. All persons required by regulations to demonstrate proficiency with the bayonet, who for any reason failed to do so or in so doing failed to qualify during the regular practice season, will run the course during the supplementary season. Only one trial for qualification by any one individual will be permitted in the supplementary season.

c. Minimum standard of proficiency.—In order to be classed as proficient in bayonet training, every infantry rifle company must qualify as bayonet expert at least 40 per cent of all persons who run the course during the regular practice season. Every such organization which fails to qualify 40 per cent of all persons who run the course during the regular practice season will be classed as deficient in bayonet training, and the

commanding officer thereof will be required to state the reasons for such failure.

529. *Description of the course.*—The course is as shown in Plate 19. There are 15 dummies, 13 of which represent targets for the bayonet and 2 for the butt strokes. The construction of the different dummies is as shown in the plates. Green brushwood is the best material for the prone and standing dummies. The head dummies may be stuffed with rags, hay, excelsior, or similar materials. Care must be taken that the butt-stroke dummies are sufficiently light in construction to do the rifle no damage. On each of the 13 bayonet dummies is placed a cardboard disk 3 inches in diameter, fastened by a nail, thrust through the disk, which serves as an aiming point for the thrust. Five feet in front of each of the standing dummies is placed a take-off line, a 4-foot length of 2 by 4 sunk flush with the surface of the ground, or a tennis marker may be used. Similar lines are placed around the rims of the three shell holes as shown in the diagram of the course.

530. *Time limit.*—The time limit for completing the course, from the starting trench to the finishing trench is 45 seconds. If more than 45 seconds are consumed, or if all obstacles and dummies are not taken, the score is zero. Nothing additional is allowed for completing the course in less than 45 seconds.

531. *Manner of running the course.*—*a.* The thrust or butt stroke that should be used in attacking each dummy on the course is the most effective one for just such a situation in actual combat as that particular dummy represents and will be prescribed herein. Trial runs will familiarize the soldier with all movements required.

b. The soldier assumes a crouching position in the starting trench, rifle grasped in either hand, the other hand grasping the edge of the trench. At the starting signal he springs out and runs at the hurdle. No part of the head or bayonet must show above the trench while awaiting the starting signal. Throughout the run the rifle is carried at high port, coming to guard at such times as will enable him most effectively to attack each dummy. Nothing is deducted from the score for touching the hurdle in clearing it. In order to score a hit on a dummy, the bayonet must strike some part of the cardboard disk on it.

c. Attack for each dummy.

(1) Dummy No. 1: Long thrust and withdrawal. In order to score a hit the bayonet must strike the disk before either foot touches the ground across the take-off line. Immediately thereafter either or both feet may be planted across the take-off

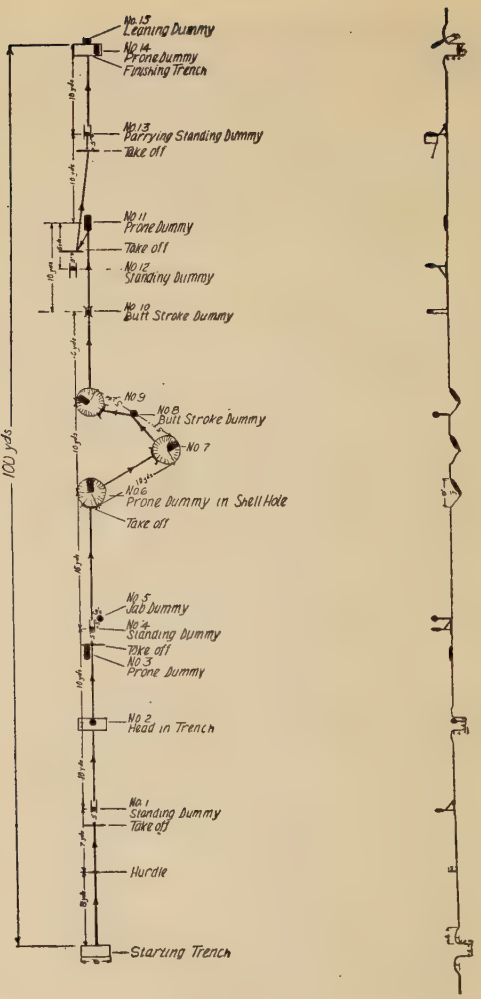


PLATE 19.—Diagram of qualification course

line to facilitate the withdrawal, which is executed as described in paragraph 500 (Pl. 5), i. e., the left hand is slipped toward the stacking swivel immediately following the thrust.

(2) Dummy No. 2: Long thrust. A forward and downward thrust while leaping the trench. The manner of withdrawal is not prescribed.

(3) Dummy No. 3: Long thrust and withdrawal. Executed in the same manner as on Dummy No. 1, except that there is no take-off line.

(4) Dummy No. 4: Short thrust and withdrawal. Provisions as to take-off line same as for Dummy No. 1. The withdrawal is executed as described in paragraph 504 *b* (Pl. 9), i. e., the right hand is slipped up in rear of the left hand after the short thrust has been made.

(5) Dummy No. 5: Jab.

(6) Dummy No. 6: Long thrust and withdrawal. In order to score a hit neither foot must touch the ground across the take-off line before the bayonet strikes the disk on the dummy, i. e., the soldier leaps at the dummy from the take-off line and may alight on his feet in the shell hole at the instant the bayonet strikes the dummy, but not before. The soldier should spring aggressively at this dummy from the take-off line and thrust while in flight.

(7) Dummy No. 7: Long thrust and withdrawal. Same as No. 6.

(8) Dummy No. 8: Vertical butt stroke No. 1. The head must be knocked down to score a hit.

(9) Dummy No. 9: Long thrust and withdrawal. Same as No. 6.

(10) Dummy No. 10: Horizontal butt stroke No. 1. The head must be knocked over to score a hit.

(11) Dummy No. 11: Long thrust and withdrawal. Same as No. 3.

(12) Dummy No. 12: Short thrust and withdrawal. Same as No. 4.

(13) Dummy No. 13: Parry right or left, long thrust and withdrawal. Same as No. 1.

(14) Dummy No. 14: Long thrust and withdrawal. In order to score a hit the soldier must not alight in the trench before the bayonet strikes the dummy.

(15) Dummy No. 15: Short thrust. Time is taken the moment the bayonet strikes this dummy. No withdrawal is required.

d. General provisions for the qualification course.

(1) Scabbards are removed from bayonets.

(2) Falling down or losing the rifle does not deduct from the score provided a recovery is made and the course completed within the time limit.

(3) The uniform will be the service uniform without coat or hat. No hobnails or spikes will be worn on shoes. The field belt stripped will be worn when running the course.

(4) Dummies must be taken in order in which the course is arranged.

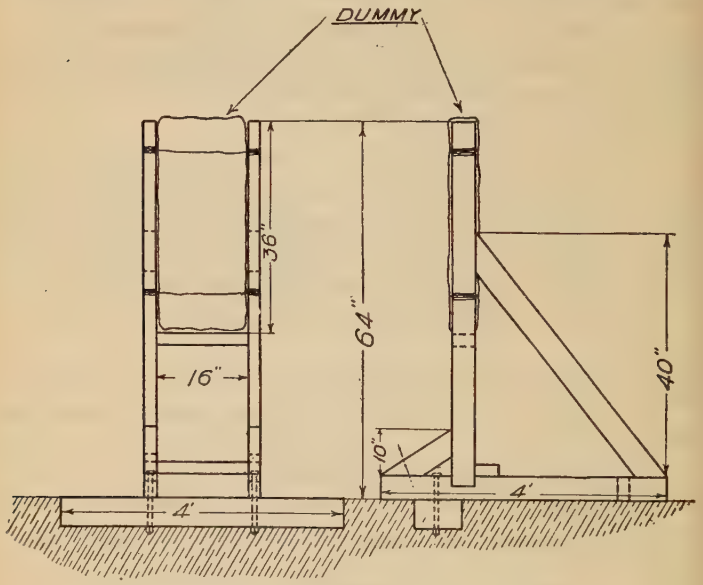


PLATE 20.—Construction standing dummy

(5) Disks on the dummies are removed from time to time.

(6) The time of each soldier running the course is taken from the starting signal to the instant the bayonet strikes the last dummy.

(7) Only one thrust, jab, or butt stroke will be allowed to secure a hit on any dummy. Similarly only one effort at a withdrawal will be allowed in order to receive a score for a correct withdrawal.

(8) The successful operation of the qualification course requires the following personnel:

(*a*) Commissioned: Six officers; namely, 1 scorer, 1 starter, 1 timer, and 3 judges, who station themselves at intervals on the course and judge groups of dummies. The timer stations himself at the end of the course. There must be a minimum of three officers present to supervise the test.

(*b*) Enlisted: A noncommissioned officer in charge of the course and such assistants as are required to renew disks and dummies, rearrange dummies, etc.

(9) The judges keep the score for the dummies they are observing and the scorer consolidates on one score card the complete score of the soldier for the course from their records.

532. *Method of scoring.*—The soldier is given 6 points for a hit on each of the 15 dummies, or zero for missing the disk or for violating the rules as to take-off line, or thrust to be used. On dummies Nos. 1, 3, 4, 6, 7, 9, 11, 12, 13, and 14 he is given 1 point each for the proper withdrawal. The total possible score is 100 points. The point for a correct withdrawal is given in each such case whether or not a hit was allowed on that dummy. The following shows the form for scoring and represents a perfect score:

Bayonet expert test

Target No.	Hits	Withdrawals	Target No.	Hits	Withdrawals
1	6	1	11	6	1
2	6	None.	12	6	1
3	6	1	13	6	1
4	6	1	14	6	1
5	6	None.	15	6	None.
6	6	1			
7	6	1	Total	90	10
8	6	None.			
9	6	1	Aggregate		100
10	6	None.			

Final qual_____ Certified correct_____

Date_____

Name_____ Serial No_____

Rank_____ Org_____

Station_____ Prior qual_____

Remarks_____

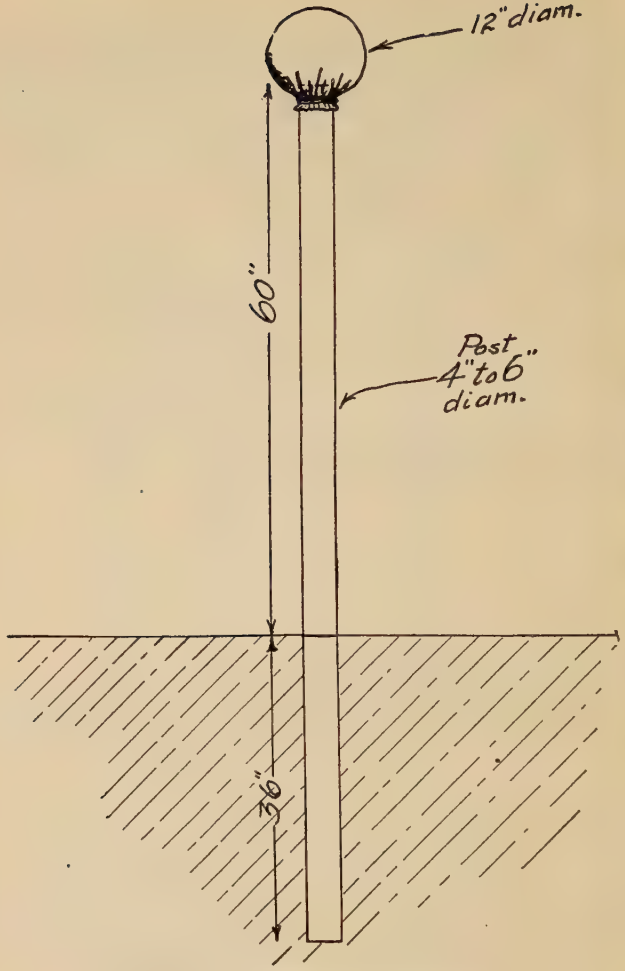


PLATE 21.—Construction jab dummy

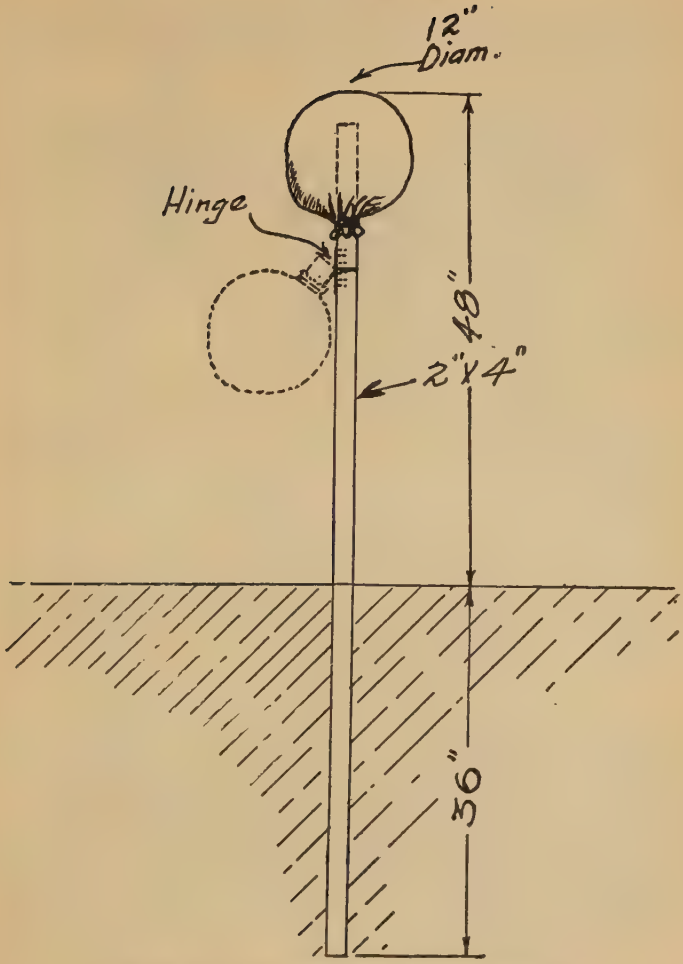


PLATE 22.—Construction butt stroke dummy

533. *Personnel to run the course, and qualification.—a.* (1) *Personnel to run the course.*—The following table shows a

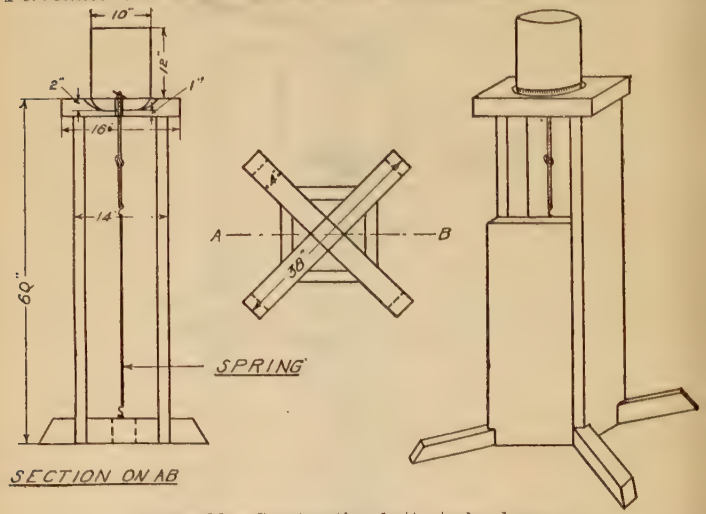


PLATE 23.—Construction butt stroke dummy

classification of personnel for the purpose of determining who will run the qualification course.

Classification of personnel	
1. All enlisted men of an Infantry rifle company	(*a*)
2. All enlisted men of Infantry not included in 1 above who are armed with the bayonet and all enlisted men of the Coast Artillery and Corps of Engineers who are armed with the bayonet	(*b*)
3. All officers and enlisted men on duty with Reserve Officers' Training Corps units, members of which run the qualification course with the bayonet	(*b*)
4. Members of Reserve Officers' Training Corps units and Citizens' Military Training Camps when armed with the bayonet	(*b*)
5. All officers on duty with an Infantry rifle company	(*c*)
6. All officers of Infantry, Coast Artillery, and Corps of Engineers not included above	(*b*)
7. Cadets, United States Military Academy	(*b*)

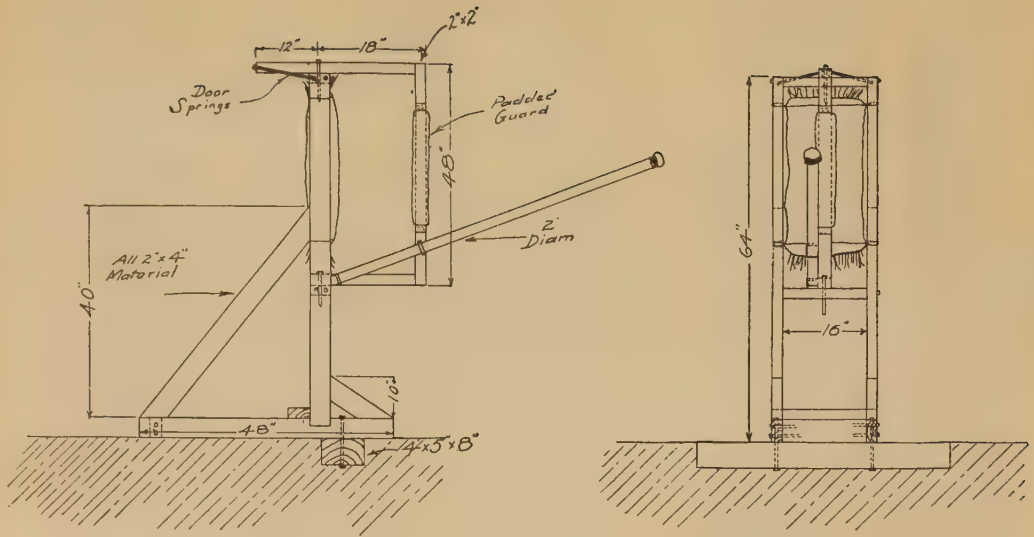


PLATE 24.—Construction standing dummy with parrying stick

(2) Explanatory notes.
(*a*) Required to run the course.
(*b*) Authorized to run the course.
(*c*) Required to run the course until the qualification or bayonet expert has been attained. Thereafter authorized to run the course.

b. Qualification.—(1) All officers and enlisted men who are required or authorized to demonstrate proficiency in the use of the bayonet will be graded, according to proficiency, as bayonet experts or unqualified. The unqualified class includes all persons on the rolls of an organization at the close of the regular practice season who ran the qualification course and failed to qualify as expert, and all those who for any reason did not run the course.

(2) The requirement for qualification as bayonet expert is 82 points.

SECTION V

QUALIFICATION ORDERS AND INSIGNIA

534. *Qualification orders.*—Immediately after the close of the qualification course, the names of men who qualify as bayonet expert will be published in orders. These orders will be issued by the commanders empowered by AR 35–2380 to issue qualification orders.

535. *Insignia.*—*a.* To each officer and enlisted man qualifying for the first time as bayonet expert, insignia (as provided for in Army Regulations), indicating their skill with the bayonet, will be issued.

b. Insignia may be worn during the period for which the qualification is held. Officers not required to run the course may wear the insignia of last qualification.

536. *How insignia are obtained.*—For procedure in obtaining insignia, see paragraph 117.

537. *Duplicates.*—For procedure in obtaining duplicates, see paragraph 118.

SECTION VI

RECORDS AND REPORTS

538. *Records.*—*a.* The company record of bayonet practice consists of the original score cards kept on the course. (See par. 532.) These score cards will be retained with the company records for one year, when they will be disposed of in accord-

ance with regulations. The score in the expert test and the qualification of each enlisted man will be transcribed to his service record under the supervision of the company commander.

b. Until paragraph 540 has been complied with and the scores transcribed to service records, the company record of bayonet practice will be kept in the possession of the company commander.

c. The record of any officer attached to a company for practice will be duly attested and transmitted to the officer.

d. The records of an enlisted man attached to the company for practice will be similarly attested and transmitted to the officer charged with the custody of the soldier's service records.

539. *Reports.*—The following reports of bayonet practice will be submitted to the proper headquarters on the forms prescribed as soon as possible after the completion of the expert test:

a. Reports of individual classification in bayonet practice.

b. Consolidated regimental report of classification in bayonet practice.

540. *Preparation, examination, and forwarding of reports.*—*a.* The company or like organization commander will prepare the report of individual classification in bayonet practice from the data contained on the original score cards and will certify to its correctness. This report, when completed, will be forwarded through channels to the regimental commander, and in addition to the individual classification will contain the following information:

(1) Number of men qualified.

(2) Number of men unqualified.

(3) Number of men on the rolls.

(4) Number of men completing the course.

(5) Percentage qualified, based on those completing the course.

(6) Total aggregate score.

(7) Average score per man.

(8) In the case of infantry rifle companies, report of company commander in each case where the minimum standard of proficiency is not attained.

b. The battalion commander or other officer who personally supervised the bayonet practice of the organization will carefully examine the company or like commander's report of individual classification by comparing it with the original score cards. If satisfied that the report is correct he will sign the certificate thereon. He will attach a narrative report of the

bayonet training in his battalion, including the result of investigation of any company that failed to reach the minimum standard of proficiency. He will then forward both reports to the regimental or next higher commander who is empowered to issue orders for the appointment and promotion of noncommissioned officers.

c. The consolidated regimental report of classification in bayonet practice will be prepared under the direction of the regimental or separate unit commander from data obtained from the reports of individual classification in bayonet practice. The regimental report will be forwarded in duplicate to the corps area or department commander who will immediately transmit one copy to the Militia Bureau for file. This report will contain the following information:

(1) For each organization.
(*a*) Number of men qualified.
(*b*) Number of men unqualified.
(*c*) Number of men on the rolls.
(*d*) Number of men completing the course.
(*e*) Percentage qualified, based on those completing the course.
(*f*) Aggregate score of entire organization.
(*g*) Average score per man.
(2) The totals of each item under (1) above.
(3) The regimental percentage qualified.
(4) The regimental average score per man.
(5) In the case of infantry rifle companies, reasons why any organization failed to reach the minimum standard of proficiency and the corrective measures applied.

Section VII

SUGGESTIONS FOR INSTRUCTORS

541. *Length of lesson and practice.*—As it is not the intention nor is it necessary to make the technique of bayonet fighting difficult, long detail is quite unnecessary and serves only to make the work monotonous. All instruction must be carried out on common-sense lines. It should seldom be necessary to give a demonstration more than two or three times, after which the individual should acquire the correct position by practice. For this reason, a lesson or daily practice should rarely last more than one hour, given in two parts of half an hour each. Nothing kills interest so quickly as monotony.

Simplicity in all explanations is essential. The instructor will insist on basic principles only. Each man has his own individual way of fighting.

542. *Work made interesting.*—Interest in the work may be created by explaining the reasons for the various positions, the method of handling the rifle and bayonet, and the uses of the thrusts. Questions should be put to the men in order to ascertain whether they understand these reasons. When men realize the object of their work, they naturally take a greater interest in it. The instructor must have the men consider him a trainer and helper.

543. *Progression.*—The various points having been properly covered in the instruction, skill, speed, and strength in execution are acquired from continual practice. The different positions, movements, and practices are arranged in the sequence in which the instruction should progress and this progression should not be unduly delayed in order to attain perfection.

544. *Conduct of classes.*—*a.* The class is always formed with two ranks facing each other, with a 3-pace interval. The instructor goes wherever necessary, but while demonstrating a movement he should station himself to one flank and in prolongation of the center line between ranks.

b. It is well to begin each lesson with a series of quickening movements, exercises, or games which develop coordination of the muscles used in bayonet combat. Following this, the instructor reviews briefly movements previously taught. Again, after combat practice, he reviews for a few minutes positions and movements and corrects faults induced by simulated individual fighting.

545. *Size of class.*—The maximum number of men to be trained by one instructor is 20. Better results will be obtained with a class of 10. Each man requires individual instruction and supervision. With a large class, this is impossible.

546. *To teach a position or movement.*—*a.* The position or movement will first be demonstrated and all essential points explained with reasons for each. Then the position or movement is shown again with the class observing each essential point, so that from the very beginning of his training the soldier is taught to use his eyes and brain. The class will next assume and practice at will the position or movement just explained and the most glaring faults are corrected. After a working knowledge of the position or movement has been gained, practice in it will be continued with the men working in pairs as master and pupil, using either hand signals or the training sticks.

b. It is a serious mistake to try to get a class of beginners to idealize at once. Only by constant practice and continual correction can perfection be obtained.

c. For closer personal instruction, the instructor may call out the men by pairs, letting the others practice at will the positions and movements already taught.

547. *Competitions.*—Competitions arouse and maintain interest in the work. In particular, two phases of bayonet training lend themselves to competitive work—

a. Assault course practice.—Competitions may be conducted between squads, classes, or larger groups, each group in turn running the assault course. The time from start to finish is taken and a record made of the number of hits secured by transfixing disks placed on dummies in various positions (i. e., prone, keeling, swinging, etc.). Such a competition might also include firing with ball ammunition at targets suitably placed in position at the end of the assault course. In the latter case, the comparative standings of competing groups depend on—

(1) Time of performance.
(2) Hits secured against dummies with the bayonet.
(3) Results of the firing.

b. Wooden-rifle combat.—No particular activity in a bayonet training course so arouses interest and enthusiasm in the work as a wooden-rifle combat tournament. The champion wooden-rifle fighter of the squad, section, platoon, etc., is determined by the process of elimination, winners of individual bouts being paired against each other until but one winner remains. Such a competition should not be undertaken until the men have attained a reasonable degree of handiness with the wooden rifle.

Section VIII

EQUIPMENT

548. *Service rifle and bayonet.*—The rifle will always be in good condition—clean, oiled, and in perfect working order. Care will be taken that the object representing the enemy be incapable of injuring the bayonet or butt. Only light sticks will be used for parrying practice with the rifle. The chief causes of injury to the bayonet are: Delivering a sweeping thrust instead of a true or direct thrust; failure to withdraw the bayonet clear of the dummy before advancing, and placing prone dummies on hard, unprepared ground.

549. *Disks.*—For obtaining good direction in thrusts there must always be an aiming mark on the dummy. Cardboard

disks, 3 inches in diameter can be improvised for this purpose. By continually changing the position of the disk the life of the dummy can be considerably prolonged. Five or six circles can be painted on the dummies to take the place of disks; the disks, however, will always be used in competitions.

550. *Dummies.*—Dummies, representing in size the trunk of the body, should be constructed of brushwood whenever available. Failing this, sacks should be used filled with the material at hand that will offer most resistance to penetration and withdrawal without injuring the bayonet. Dummies must be so suspended that they offer the most resistance to the attacker and at the same time can be easily replaced.

551. *Withdrawal boards.*—The withdrawal board is a device used to impress upon the mind of the student the amount of resistance to be expected in withdrawing the bayonet after a thrust. It can be constructed of a barrel stave or other board of similar dimensions hinged at the top to a 4 by 4 inch upright with the lower end left free. The instructor causes the student to place his bayonet between the upright and the board and then presses upon the free end of the board, thus clamping the bayonet between the board and the upright. The amount of pressure exerted by the instructor varies with the resistance which it is desired to illustrate.

552. *Training sticks.*—The training stick is a light stick, 5 feet to 5 feet 6 inches long and ¾ inch to 1 inch in diameter, padded at one end and provided at the other with a light rope or wire thrusting ring having a diameter of 3 inches.

553. *Combat equipment.—a plastrons, masks, and gloves.*—One set for each man.

b. The wooden rifle.—Same outline as the service rifle, except that the part which corresponds to the bayonet is in prolongation of the barrel, no attempt being made to have the bayonet below the barrel, as this would weaken the junction. The balance is the same as the service rifle, and the weight nearly the same. A tennis ball, fastened to the end by canvas strips, makes the best pad. Hair or excelsior will answer. The wooden rifle can be sawed out of a piece of timber 2 inches by 6 inches by 5 feet, preferably of oak or other wood not easily split, and trimmed into shape by hand. The length of the wooden rifle, with tennis ball attached, can be made the same as the Model 1903 rifle, with the bayonet fixed.

554. *Boxing gloves and wrestling mat.*—Boxing gloves and a wrestling mat are essential parts of the equipment. They are indispensable in developing close and rough-and-tumble fighting.

555. *Trench system.*—There must be one or more trench systems for use in the assault training, trench and obstacle jumping, mopping-up parties, trench raiding, and, in general, for the tactical application of the principles of the bullet, bayonet, and grenade combined. It is not desired to prescribe a fixed type of trench system. If the terrain is suitable for the construction of moving, bobbing, or disappearing targets, a combined course can easily be constructed.

LILLIAN MICHELSON
RESEARCH LIBRARY
(GOLDWYN STUDIOS COLLECTION)
THE HOLLYWOOD GROUP
6233 HOLLYWOOD BLVD.
213-462-8884 213-654-7177

HAND AND RIFLE GRENADES

(Abstracts of T. R. 1350 B and C)

		Paragraphs
SECTION I.	General	556
II.	Firing mechanism and fuze assembly	562
III.	Fragmentation grenades	564
IV.	Smoke grenades	568
V.	Lachrymatory grenades	573
VI.	Smoke hand grenade for training	577
VII.	Practice hand grenade	583
VIII.	Dummy hand grenade	585
IX.	Precautions	586

SECTION I

GENERAL

556. *Scope.*—This regulation gives all information necessary for the troops regarding the construction, functioning, and identification of the different types of grenades and the components thereof.

557. *References.*—Proper nomenclature for the grenade and components described herein is given in Standard Nomenclature List (S. N. L.) S–3, "Hand and Rifle Grenades and Fuzing Components."

558. *Uses.*—In its various types and within its limitations the grenade is a missile similar in its general action to a shell or bomb. It is made for projection in two ways—by hand and by rifle. The effective range of the hand grenade is limited entirely by the proficiency of the thrower. The rifle grenade has a greater effective range and is used to fill the gap in range between the hand grenade and the 3-inch trench mortar.

559. *Types of grenades.*—The grenade is a weapon used by the infantry soldier as a supplement to his primary weapons the rifle and the bayonet, forming a very important class of ammunition especially for trench warfare. In both hand and rifle

grenades there are several types, each having a different content, dependent on the purpose for which designed. The following are authorized for manufacture and issue to the service:

Hand grenades:

a. Fragmentation hand grenades, Mark II. (Fig. 1.)

b. Smoke (W. D.) hand grenades, Mark II. (Fig. 2.)

c. Lachrymatory (C. N.) hand grenades, Mark V. (Fig. 3.)

d. Practice hand grenades.

e. Dummy hand grenades, Mark I.

f. Smoke (F. M.) hand grenade. (For training purposes, as they do not present the fire hazard of the (W. P.). Discontinued, because they do not withstand storage, until further developed.

Rifle grenades:

a. Smoke (W. P.) rifle grenades, Mark I. (Fig. 4.)

b. Lachrymatory (C. N.) rifle grenades, Mark II.

c. Smoke (F. M.). (See remark in *f*, above.)

d. A fragmentation rifle grenade is now under development.

560. *Description.*—Hand grenades, with the exception of the dummy hand grenade, Mark I, consist of two main units, the fuze assembly and the loaded grenade body. Rifle grenades have in addition the rifle rod and the special caliber .30 blank cartridge. These units are never issued assembled but are packed and shipped separately in wooden boxes and are assembled in the field just prior to their use. An exception to this is the new type fragmentation hand grenade, which is issued complete with the fuze assembly assembled in place. A spanner wrench is provided for assembling the fuze assembly into the hand grenade body, one spanner wrench being packed in each box containing fuze assemblies.

561. *Operation of the grenade.*—All grenades are of the "time" type, in that they function after a certain fixed time has elapsed after being thrown or fired. The method of igniting the time fuze is not the same for hand and rifle grenades.

a. The hand grenade.—(1) When the safety pin has been removed, the hand grenade will arm and fire the primer the instant the lever is released, and the grenade will function in approximately five seconds after the primer has fired.

(2) To arm these grenades, the thrower grasps the grenade firmly in his throwing hand in such manner as to secure the lever tightly against the body of the grenade. The first finger of the free hand is inserted in the safety-pin ring, and this ring is gripped tightly between the second and third joints of the finger. The safety pin is withdrawn by pulling the safety-pin ring, and the grenade is then ready to be thrown.

(3) The thrower must take every precaution after the safety pin has been withdrawn not to release his grip on the level until the grenade is thrown.

(4) When the grenade is thrown, the lever is released, the striker, impelled by the striker spring, rotates around the hinge pin, throwing off the level, strikes and explodes the primer. The flash from the primer ignites the fuze, which burns approximately five seconds and then explodes a small charge of black powder contained in a metal cup, which in turn causes the grenade to function.

b. The rifle grenade.—(1) To fire the rifle grenade, insert the attached rifle rod into the barrel of the rifle full length. Remove the safety pin from the fuze assembly and be sure that the cover is thrown off. Place the butt of the rifle on the ground and support it well. Insert the special blank cartridge into the chamber of the rifle, check rifle for elevation desired, and then fire.

(2) When the safety pin is removed from the fuze assembly, a spring automatically throws off the cover. When the rifle is fired, the pressure of the powder gases from the fired special blank cartridge ejects the grenade from the rifle, inertia or "set-back" causes the striker to break the shear wire, and the firing pin of the striker hits and explodes the primer. The flash from the primer ignites the fuze, which burns a certain fixed time (approximately 11 seconds from smoke grenades and approximately 5 seconds for lachrymatory grenades) and then functions the grenade. In the case of smoke grenades, the fuze is fitted with a detonator, which explodes and bursts the grenade, scattering its contents. In the case of lachrymatory grenades, where no detonator is used, the end of the fuze is tipped with an igniter which initiates the burning of the chemical filler of this grenade.

Section II

FIRING MECHANISM AND FUZE ASSEMBLY

562. *General.*—"Firing mechanism" is the term used to describe the mechanical parts of the fuze assembly. When assembled with primer, fuze, and detonator or igniter it is known as the fuze assembly or fuze and detonator assembly. The assembly is to the grenade what the fuze is to an artillery projectile. It is a device inserted in the grenade and used to function it at the time and under the circumstances desired.

563. *Types.*—The term "fuze and detonator assembly" is used in smoke grenades where the use of a detonator is required. The term "fuze assembly" is used in the lachrymatory grenades where only ignition of the contents is desired and in fragmentation hand grenades, where a detonator is not required to produce an explosion of the contents. In the rifle grenade assemblies they are designated, respectively, as Mark IX and Mark VIII. The specific designations for the assemblies for the hand grenades have not yet been determined.

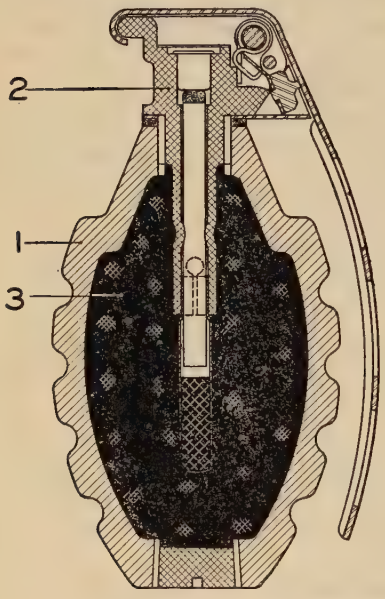


FIG. 1.—Fragmentation hand grenade, Mark II

1. Grenade body. 2. Fuze and detonator assembly. 3. Explosive charge.

SECTION III

FRAGMENTATION GRENADES

564. *Description.*—The fragmentation grenade is the authorized explosive grenade for use in the service. The latest type is filled with approximately 1.85 ounces of E. C. powder, a low explosive. The total weight of this grenade is about 22 ounces. The grenade body is made of cast iron, being about the size and shape of a large lemon, and is designed to fit comfortably in the hand. The outside surface of the body is deeply serrated longitudinally and transversely to assist in forming uniform effective sized fragments when the grenade explodes. The bottom of the grenade body is closed by a die cast pipe plug, which is screwed and cemented into the grenade body.

565. *Function.*—Its function is to cause casualties with the fragments of the body.

566. *Assembly.*—Formerly the loaded grenade body and the fuze assembly were issued separately, 24 loaded grenade bodies being shipped in one wooden packing box and 384 fuze assemblies being shipped in a separate wooden packing box. The assembly of these two components was not made until the time the grenades were to be used. The new type fragmentation hand grenade is shipped and issued completely assembled, 10 complete grenades being shipped in a wooden packing box.

567. *Marking.*—Fragmentation hand grenades when loaded with explosive are painted *yellow.* However, the old marking system called for painting these *gray,* and some will be found in service so painted.

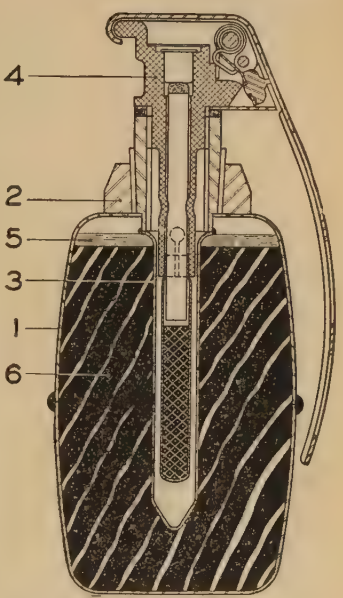


FIG. 2.—Smoke (W. P.) hand grenade, Mark II

1. Grenade body. 2. Bushing. 3. Detonator thimble. 4. Fuze and detonator assembly. 5. Water. 6. White phosphorus.

SECTION IV

SMOKE GRENADES

568. *Description.*—The smoke (W. P.) grenade is the authorized one for use in the service. The body is loaded with approximately 6 ounces of white phosphorus. The total weight of the smoke hand grenade is about 14½ ounces, while the smoke rifle grenade, including the rifle rod, weighs 15.64 ounces.

The grenade body is barrel shaped and is made of two thin sheet steel cups welded together. A steel bushing is welded to the body. This bushing has a taper threaded or pipe-

threaded hole through it, into which the detonator thimble is screwed. This taper-threaded joint forms an air-tight seal which protects the phosphorus charge from exposure to the air. The inside of the detonator thimble is threaded to take the fuze and detonator assembly, either rifle or hand. A steel base disk is soldered to the bottom of the rifle grenade body and tapped at the bottom to permit of the insertion of the rifle rod. This disk covers the entire base of the grenade and serves to prevent it from crushing in when the grenade is fired from the rifle. The rifle rod is threaded at one end to screw into the base disk. Immediately below the threaded portion two slightly raised places are formed, one on each side of the rod, to prevent any possibility of the rifle rod becoming detached from the grenade and dropping down in the rifle barrel, since such has caused serious accidents. The rifle rod is about 15 inches long and is zinc or copper plated to prevent rusting.

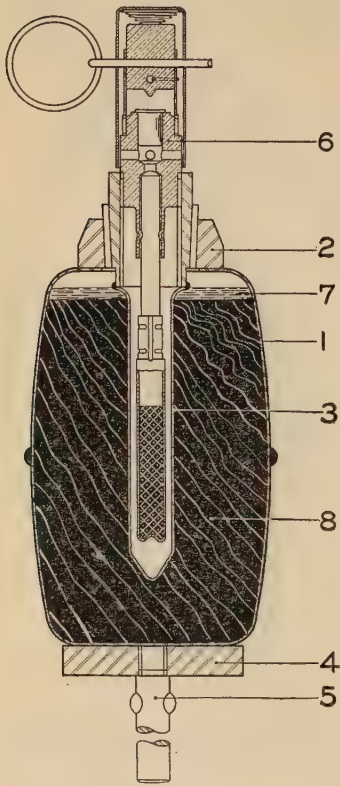


FIG. 3.—Smoke (W. P.) rifle grenade, Mark I

1. Grenade body. 2. Bushing. 3. Detonator thimble. 4. Base disk. 5. Rifle rod. 6. Fuze assembly. 7. Water. 8. White phosphorus.

569. *Function.*—Its function is to cause obscuring smoke clouds, although it also has some incendiary effect. The flying fragments of bursting phosphorus are very effective against personnel, and it causes many casualties in this manner.

570. *Assembly.*—*a.* The assembly of the fuze and detonator assembly to the gre-

nade should be performed at the time the grenades are to be used. The loaded grenade bodies are usually shipped 24 in a wooden packing box and the fuze and detonator assemblies are usually shipped 384 in a separate wooden packing box.

b. The loaded grenade bodies are shipped and issued with wooden plug screwed in the fuze assembly seat. This wooden plug prevents injury to the screw threads and prevents the entrance of dirt or other foreign matter into the grenade.

(1) Unscrew and remove the wooden shipping plug. If the plug is too tight to remove with the fingers, press it from side to side to loosen it, or use pliers.

(2) Examine the interior of the grenade and remove any dirt or other foreign matter.

(3) See that the fuze assembly sealer and composition washer of the hand grenade are in their proper places on the fuze and detonator assembly.

(4) Insert the detonator end of the fuze and detonator assembly into the grenade body.

(5) Hold the fuze and detonator assembly in one hand and screw the grenade body onto the fuze and detonator assembly with the other hand. In this operation the fuze and detonator assembly should be the stationary part and the grenade body the moving part. A spanner wrench is packed in each box of fuze and detonator assemblies for the *hand* grenade, and this should be used to firmly seat the fuze and detonator assembly into the grenade. The fuze and detonator assembly should screw into the grenade body easily with the fingers, and any which can not be assembled in this manner should be discarded.

(6) Assemble the rifle rod to the *rifle* grenade by screwing the rifle rod tightly into the base disk. It should not be necessary to use pliers or a wrench for this operation. The grenade is now ready to be inserted in the rifle. The rifle rod should slide down the bore of the rifle easily, and should the rifle rod be bent or if for any other reason it does not enter the bore of the rifle freely it should be discarded and another used. *Use only the special blank cartridges furnished with these grenades.* They are packed in the same box with the rifle rods and the base of the cartridge is stamped with the letters "CRG." Under no circumstances must the service ball cartridge be used, as it will burst the rifle. Neither should the service blank cartridge be used, since it is less powerful than the special cartridge furnished and will not project the grenade the proper distance or dependably arm the fuze assembly.

571. *Marking.*—The smoke (W. P.) grenade is marked for identification as follows: The body of the grenade, including the bushing and detonator thimble, is painted *gray*. A yellow stripe ½ inch wide is painted around the center of the grenade body to indicate a smoke filler. The grenade body is also stenciled above the yellow band with the letters "WP" and below the yellow band with the word "SMOKE." These stencilings are in letters about ¾ inch high. The lot number, in letters and figures about ¼ inch high, is stenciled under the word "SMOKE." All this stenciling is in yellow.

572. *Storage and disposition.*—*a. Storage.*—(1) Due to the fact that phosphorus-filled grenades have been found dangerous for indefinite continued storage, it has been found necessary to prescribe a limiting time within which these grenades must either be expended or destroyed.

(2) The danger in storage of these grenades is principally due to the rusting of the grenade body, which eventually exposes the white phosphorus filler to the air and white phosphorus takes fire spontaneously when exposed to the air. Therefore all stocks of these grenades in storage should be isolated in so far as practicable in order to prevent excessive damage in case spontaneous combustion should occur. They should be stored away from explosives, gas, or combustible material. Storage should be in as cool a place as possible and inspection should be made at sufficient intervals to insure that rusting of the body does not take place. Grenade bodies which show indications of rusting should be cleaned and repainted. Where storage facilities allow, it is desirable to store these grenades in a compartment which could be flooded in case of necessity. Leaky or smoking grenades should be immediately submerged in a pail of water, using precaution to avoid burns in handling, and thence removed from storage and destroyed.

(3) The packing box for smoke (W. P.) grenades is marked with the limiting date within which the grenades must be used. This date will not exceed 12 months after the date of issue from a manufacturing arsenal or storage depot to a tactical unit. However, when grenades remain in storage depots and are not issued, this date will not exceed 18 months from the date of original packing or subsequent inspection. Before the expiration of the 18 months' period, the grenades in storage must be subjected to a 100 per cent inspection and those found serviceable may be repacked and re-marked for another 18 months' period. This procedure will be continued until the grenades are issued or through a subsequent inspec-

tion have been found unserviceable and destroyed. In other words, the grenades may remain in a storage depot an indeterminate time, provided they are inspected at 18 months intervals, but when once issued to a tactical unit they must be expended within 12 months of the date of issue, as stenciled on the packing box.

b. Disposition.—(1) When it is found necessary to destroy smoke (W. P.) grenades, the following procedure has been found satisfactory:

(2) Prepare a pit in the ground about 2 feet square and not less than 3 feet deep. Place sufficient fuel on the bottom of the pit to insure a hot fire and place not more than 50 grenades on top of the combustible material. Should it be desired to also destroy fuze and detonator assemblies, they should be assembled in the grenades. Then light the fire, and all personnel should retire to a safely barricaded shelter or to a distance of not less than 100 yards, as detonations may occur scattering the burning phosphorus for a considerable distance in all directions. After the fire has been lighted, no attempt should be made to investigate the pit until the fire has burned entirely out and the pit is cold.

Section VI

LACHRYMATORY GRENADES

573. *Description.*—The lachrymatory (C. N.) grenade is the authorized one for use in the service. The chemical used (C. N.) is dissolved in a suitable solvent and is released by burning, the grenade body not being ruptured as in the case of the other grenades. The gas produced in this manner is classed as a nonpersistent gas. The grenade body is filled about two-thirds full with the C. N. mixture, which is covered with a layer of igniter composition. Eight small holes are drilled through the grenade body, near the top, these being covered with pieces of tape to prevent the entrance of moisture or dirt. When the grenade functions, these pieces of tape are blown or burned off and the gas escapes through these eight holes. The total weight of this grenade, filled and assembled with the fuze and igniter assembly, is about 8.65 ounces for the hand grenade and 9.79 ounces for the rifle grenade, which includes the rifle rod.

The bodies of the grenades now being issued are the same as the smoke grenade with the addition of two corrugations formed

around the body near the base, which serves to distinguish it from the smoke (W. P.) grenade body.

574. *Function.*—Its function is to produce the so-called tear gas, which causes a severe burning effect, principally to the eyes, causing involuntary weeping.

575. *Assembly.*—The method of assembly and the precautions are the same as for the smoke grenade.

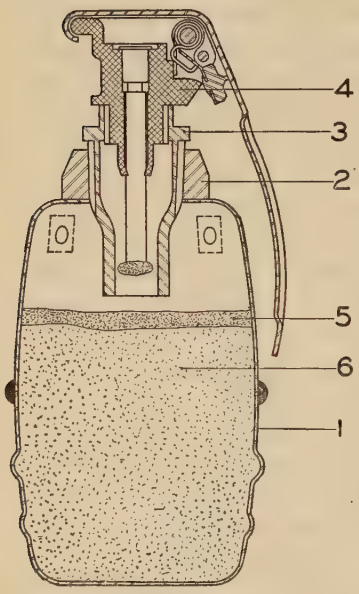


FIG. 4.—Lachrymatory (C. N.) hand grenade, Mark V

1. Grenade body. 2. Bushing. 3. Thimble. 4. Fuze assembly. 5. Igniter composition. 6. C. N. mixture.

576. *Marking.*—The lachrymatory (C. N.) grenade is marked for identification as follows: The body of the grenade, including the bushing and thimble (and base disk of the rifle grenade), is painted *gray*. A green stripe ½ inch wide is painted around the center of the grenade body to indicate a nonpersistent chemical filler. The grenade body is also stenciled above the green band with the letters "CN" and the word "GAS." These stencilings are in letters about ¾ inch high. The lot number, in letters and figures about ¼ inch high, is stenciled near the base of the grenade. All this stenciling is in green.

SECTION VI

SMOKE HAND GRENADES FOR TRAINING

577. *Description.*—Due to the element of danger when using white phosphorus smoke hand grenades on account of the flying pieces of burning phosphorus and the fact that they constitute a fire hazard when used in dry grass and in proximity with other inflammable material, there are being developed, for training purposes, F. M. smoke hand grenades. These grenades

produce a dense cloud of white smoke of good obscuring powers, they constitute no fire hazard, and they give about the same danger radius from fragments as the W. P. smoke hand grenades. F. M. smoke hand grenades are fitted with the same fuze and detonator assemblies as the W. P. grenades. In fact, the entire grenade is exactly the same with the exception of the loading, which is approximately 8½ ounces of titanium tetrachloride (F. M.) instead of the white phosphorus (W. P.). The total weight of the grenade, filled with F. M. and assembled with the fuze and detonator assembly, is about 17 ounces.

578. *Function.*—F. M. smoke hand grenades do not have the casualty-producing effect which is so valuable in W. P. smoke hand grenades for war purposes and are therefore intended primarily for training purposes. Their only function is to produce a dense cloud of white smoke for screening purposes.

579. *Assembly.*—The assembling, handling, and use of F. M. smoke hand grenades are exactly the same as that of W. P. smoke hand grenades, and the same general precautions should be observed. Each box of loaded grenade bodies and fuze and detonator assemblies contains a data card on which is printed the name, lot number, date loaded, etc., of the contents of the box. On the reverse side of the data card which is packed with the loaded grenade bodies is printed instructions for assembling the grenade and how to use it.

580. *Marking.*—The entire grenade body, including the bushing and detonator thimble, is painted *gray*. A *yellow* stripe ½ inch wide is painted around the center of the grenade body to indicate a smoke filler. The grenade body is also stenciled above the yellow band with the letters "F. M." and below the yellow band with the word "SMOKE." These stencilings are in letters about ¾ inch high. The lot number, in letters and figures about ¼ inch high, is stenciled under the word "SMOKE." All this stenciling is in yellow.

581. *General precautions.*—*a.* While F. M. is not particularly dangerous except to the eyes, precautions must be taken to avoid having the liquid come in contact with the skin or clothing. Gas masks and protective gloves or mittens should be worn when handling leaky grenades. A large excess of water can be used to destroy small spills or pools of F. M. or to remove F. M. from the hands, clothing, etc. In addition to water, sodium carbonate or sodium bicarbonate solution may be used to neutralize the hydrochloric acid formed by the reaction between water and F. M.

b. The dangerous area for fragmentation from these grenades is usually confined to a 10 or 15 yard radius; in isolated cases, fragments may be thrown as far as 20 or 25 yards.

582. *Storage.—a.* All F. M. smoke hand and rifle grenades in storage should be frequently inspected for evidence of leaks or corrosion. They may be kept in storage for an indefinite period if no leakage occurs.

b. F. M. smoke hand grenades will not, as a rule, corrode from the inside of the grenade. Small leaks may occur, however, from outside corrosion and other causes, and such leaks will be enlarged by the decomposition of the escaping F. M. F. M. in contact with the moisture of the air forms hydrochloric acid which will speedily corrode other grenades which may be in contact.

c. Fumes from F. M. smoke hand grenades are extremely corrosive to machinery and metal parts of buildings. In appreciable concentration they will cause disintegration of cloth and similar fabric. Therefore, if practicable, such grenades will be stored in buildings constructed of brick, tile, or cement and containing no valuable machinery, cloth, or leather.

d. Leaky grenades will be removed from storage and destroyed in accordance with existing regulations.

e. F. M. smoke hand grenades are issued packed in the same type of packing box as is used for W. P. smoke hand grenades, and the box is marked in a similar manner, except that no limiting date, within which they must be used, is marked on the box, as is the case with W. P. smoke hand grenades.

Section VII

PRACTICE HAND GRENADE

583. *Description.—a.* The body of this grenade is the same as the body of the fragmentation hand grenade and it takes the same fuze and detonator assembly as the old type fragmentation hand grenade. The plug, however, is removed from the base of the grenade body, so that the gases from the explosion of the detonator will be released, and thus the grenade body is less apt to fracture. A new practice hand grenade is being developed which will more nearly simulate the new type fragmentation hand grenade.

b. The practice hand grenade is issued as two separate units, the empty grenade body and the fuze and detonator assembly.

584. *Function.*—The function of this grenade is, as the name implies, to give practice in the use of the hand grenade, par-

ticularly the fragmentation hand grenade, and the operations of throwing are identical with those for the fragmentation hand grenade. Upon functioning of the practice hand grenade, the detonator produces a good sharp report and forms a smoke cloud, thus simulating the action of a fragmentation hand grenade. The body of the practice hand grenade is sometimes fragmented by the explosion of the detonator, and pieces are sometimes thrown for quite a distance. For this reason this grenade is not entirely satisfactory and another type is being developed.

SECTION VIII

DUMMY HAND GRENADE

585. *Description.—a.* The dummy hand grenade is made of cast iron, and is approximately the same in shape as the fragmentation hand grenade, a projection being cast on the top and side to represent the fuze assembly. It is used to give preliminary practice, primarily in grenade throwing. It weighs about 22 ounces. The dummy hand grenade is painted black.

b. Since no more dummy hand grenades of the above type are at present available for issue, they will be substituted by empty fragmentation hand-grenade bodies fitted with fuze assemblies having live primers, but without detonators. Should the supply of these become exhausted, empty grenade bodies without fuze assemblies will be issued for use as dummy hand grenades.

SECTION IX

PRECAUTIONS

586. The following precautions apply primarily to the fragmentation hand grenade, but should be observed in the use of any hand grenade:

Remember that the hand grenade is always loaded and cocked. It is always pointed at you. It is a safe weapon when properly handled, but a very dangerous one when handled otherwise.

If you accidentally allow the striker to function, do not drop the grenade and run, but throw the grenade as far as you can and then throw yourself flat on the ground.

If you accidentally drop the grenade after the safety pin has been withdrawn, pick it up and throw it. There is plenty of time to do so if you do not hesitate.

A live grenade should never be thrown unless cover is at hand behind which the operator and spectators may secure shelter. Fragments may fly over 200 yards.

Do not arm the grenade by withdrawing the safety pin unless the grenade is to be thrown at once. If the grip on the grenade is accidentally released after the safety pin is withdrawn, the striker will function immediately and the grenade will explode in about five seconds.

Do not assume that you can guess when five seconds have elapsed and try to function the primer a moment or so before throwing the grenade. You will surely get caught some time if you do so.

Unless you remember these warnings and act accordingly, you and your comrades will become the victims of your carelessness.

The detonator of the fuze and detonator assembly is dangerous in itself. Its size is no indication of its power, for it is powerful enough to blow one's arm to pieces.

The detonator contains a small charge of fulminate composition and this explosive is very sensitive to shocks or sudden changes in temperature. Consequently the only safe thing to do is to handle them with great care.

Do not attempt to pull a detonator off the fuze; the only safe way to remove it is to *cut the fuze above the detonator* if the detonator must be removed.

A live grenade that has misfired should be recovered only by some one who understands the mechanism thoroughly. At least 10 minutes should elapse after throwing before approaching or touching the grenade.

Do not attempt to disassemble a grenade that has failed to function. Let an expert do it, if such procedure is necessary.

LILLIAN MICHELSON
RESEARCH LIBRARY
(GOLDWYN STUDIOS COLLECTION)
THE HOLLYWOOD GROUP
6233 HOLLYWOOD BLVD.
213-462-8884 213-654-7177

INSTRUCTION AND QUALIFICATION WITH HAND AND RIFLE GRENADES

		Paragraphs
SECTION I.	Preliminary instruction and training	587
II.	Fuzing and throwing fuzed practice grenade	596
III.	Throwing fuzed live grenades	598
IV.	Firing rifle grenades	601
V.	Police of grenade range and destruction of duds	607
VI.	The grenade court	609
VII.	The qualification course	616
VIII.	Qualification orders and insignia	621

SECTION I

PRELIMINARY INSTRUCTION AND TRAINING

587. *Importance of training in throwing.*—Grenade throwing is the most important branch of hand-grenade training. A very high standard of accuracy is required. Accuracy not only produces destruction by the bursting grenade at or near the target, but also destroys an opponent's morale. The thrower must always follow accurately the prescribed method of arming (see par. 561) and throwing so that in the latter stages of training these operations will be performed mechanically. Perfection of throwing form, accuracy, and range are the desired factors in grenade throwing. Accuracy and range are cultivated by practice, but all throwing practice must conform to the prescribed form. Due allowance must be made, however, for an individual's conformation.

588. *Method of holding the grenade.*—The grenade should be held in the right hand, left forefinger inserted through the safety-pin ring. (A left-handed man may hold the grenade in his left hand.) In this position the safety pin can be removed without altering the grip for throwing. The thumb and forefinger should be around the upper horizontal serration of the defensive hand grenade. Do not grip the grenade directly under the fuze assembly head because it will result in inaccuracy, tumbling of the grenade in flight, and reduction of the range. The fuze assembly head has on occasion been

caught by the fingers of the thrower, causing the grenade to drop immediately upon leaving the hand.

589. *General rules for throwing.*—The grenade is thrown by a combination of a shot put and baseball catcher's peg motion. The biceps muscle of the throwing arm should be contracted

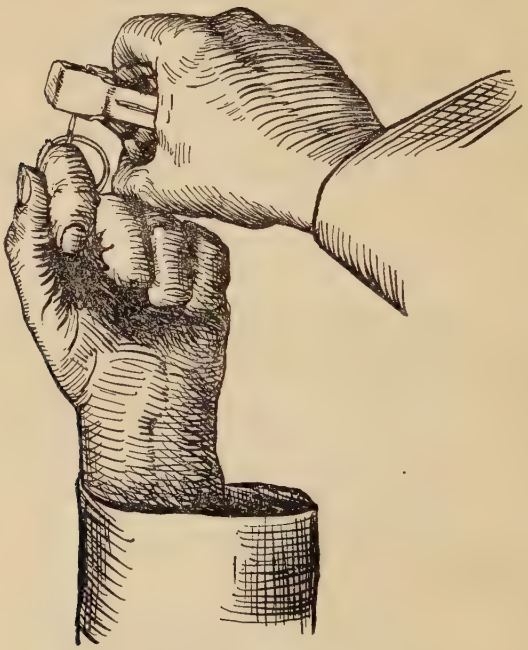


FIG. 5.—Method of removing safety ring

just before throwing. The grenade is released just before the arm is fully extended. The grenade is given a spinning motion as it leaves the hand so that it will rotate around its longer axis, fuze assembly to the rear during its flight to the target. The maximum range is obtained when the grenade leaves the hand traveling at an upward angle of 45°. The hand being at

the shoulder, to execute the throw carry the right hand forward and upward without twisting the wrist. The left arm always counterbalances the movement of the right arm. If the grenades are striking to the right or left of the target, the entire body should be shifted to the left or right. For the first practice in the standing, kneeling, and prone positions, do not attempt to throw over 20 yards, as the throwing arm might be injured. Thirty-five yards is considered a good range after throwing the first 100 grenades, i. e., averaging 30 or 40 grenades a day for three or more days. A 50-yard range is above average. Grenades have been thrown 70 yards. The range is measured from the left foot of the thrower to the point where the grenade first strikes the ground.



FIG. 6.—Position of "Stand"

590. *Throwing from the standing position.*—Commands are as follows:

a. Stand.—Execution: Face to the right, move the left foot 1½ to 2 feet toward the target, assume a well-balanced and easy position, left foot pointing in the general direction of the target, hands down and in front of the center of the body, right hand grasping the grenade, safety lever between the thumb and forefinger, left forefinger grasping the safety-pin ring. When inert or dummy grenades are used, the left forefinger grasps the right thumb, simulating grasping the safety-pin ring.

b. Pull pin.—Execution: Pull out the safety pin with a twisting, pulling motion, without moving the hands from the front of the center of the body. When inert or dummy grenades are used simulate this movement.

c. Prepare to throw.—Execution: Quickly bring the right arm into position, the elbow at the height of and on line with the shoulders, back of the hand down (palm up) and near or touching the shoulder. At the same time extend the left arm (palm of the hand down) in the direction of the target. The weight

of the body is on the right foot. The body is bent to the right, right knee bent, eyes sighting over the left hand to insure direction and then fixed on the target. If throwing from a trench or throwing pit the eyes should be fixed on the parapet or top of pit.

d. Throw.—Execution: Quickly move the right arm upward and to the front without twisting the wrist and release the grenade just before the arm is fully extended, being sure to impart that spinning motion described in paragraph 8. At the completion of the throw the left foot and right toe are on the ground.



FIG. 7.—Position of "Prepare to throw"

e. Recover.—Execution: Resume the position of "stand."

591. *Throwing from the kneeling position.*—Commands are as follows:

a. Kneel.—Execution: Face to the right, kneel on the right knee, right leg directly to the rear, left leg and foot pointing in the general direction of the target. Weight of body is on right knee.

b. Pull pin.—Execution is the same as for the standing position.

c. Prepare to throw.—Execution is the same as for the standing position, but the weight of the body is on the right knee.

d. Throw.—Execution is the same as for the standing position but the body is brought to rest by the chest coming in contact with the left knee and upper leg at the completion of the throw.

c. Recover.—Execution: Resume the position of "kneel."

592. *Throwing from the prone position.*—Commands are as follows:

a. Lie down.—Execution: Assume a prone position. The body is on a line approximately in prolongation of the target so that when the position "prepare to throw" is taken it will be unnecessary to shift the feet or left knee. Either cheek is near or on the ground. Hold grenade as described in paragraph 588, but in front of the head.

b. Pull pin.—Execution: Hold the grenade in front of the head and pull the pin the same as described for the standing position.

c. Prepare to throw.—Execution: Draw back the hands and arms so that the hands are near the shoulders, left hand and forearm flat on the ground; right forearm and wrist *only* on the ground, shove the body upward, pivoting the weight of body on left knee, straighten the right leg and extend it straight to the rear. Hold the body upright. Do not push up with the hand holding the grenade. Keep this hand clear of the ground. Continue until a kneeling position is assumed. Being now in a kneeling position, kneeling on the left knee, assume the same positions for the hands, arms, trunks, and eyes as given for the standing position.



FIG. 8.—"Throw."—Grenade released

d. Throw.—Execution is the same as for the standing position. Stop the forward motion of the body by placing the right hand on the ground after the throw, permitting the body



FIG. 9.—"Throw."—Movement completed



FIG. 10.—Kneeling position

to continue to the ground. This position will leave the right hand near the head and the left hand near the waist on the left side. The left hand can be used to carry another grenade to the right hand for the next throw.

c. Recover.—Execution: Place the left hand next to the right in front of the head. Resume the prone position.

593. *Throwing prone, advancing.*—The body of the thrower can be advanced about 2 feet at each throw if this is desired. The commands and movements are the same as for the prone



FIG. 11.—Throwing from kneeling position

position except in "prepare to throw." As the hands are brought back advance the left knee as far as possible. The distance that the left knee is advanced is the distance that the body will be advanced for each throw.

594. *First step.*—The class being assembled at the main grenade court, with a minimum of five dummy grenades for each member, the instructor will briefly explain the theory of use of grenades, their place in the Infantry armament, the general precautions to be observed in handling them. He will then show them the throwing positions and the manner of throwing from standing, kneeling, and prone positions, successively.

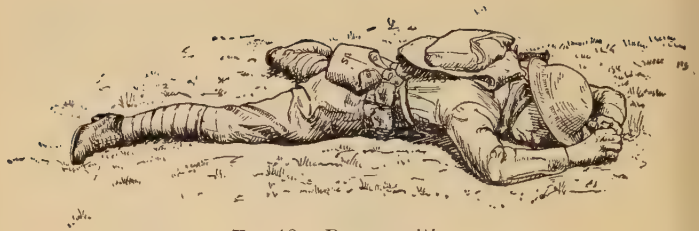


FIG. 12.—Prone position



FIG. 13.—"Prepare to throw."—First position

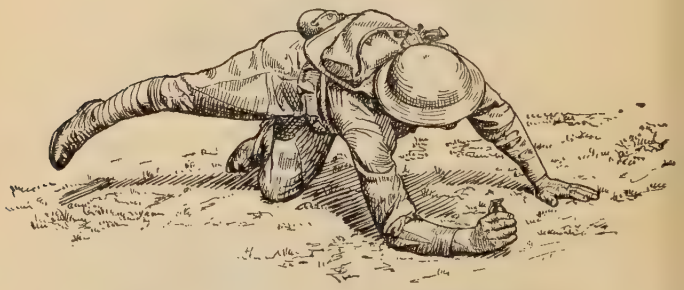


FIG. 14.—"Prepare to throw."—Second position



Fig. 15.—"Prepare to throw."—Third position



Fig. 16.—"Throw."—Grenade released

As each is demonstrated the class is practiced in it until tested and rated "satisfactory" by the instructor.

595. *Second step.*—The next step in the instruction is throwing dummy grenades at the targets from the 15-yard line from

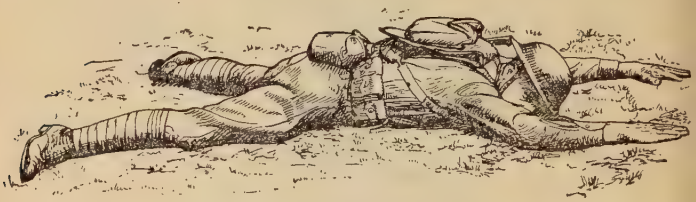


FIG. 17.—"Recover"

standing, kneeling, and prone positions, successively. When proficiency is demonstrated by test, both as to accuracy and form in each position, the training will be continued in the same manner at each successive greater range and then from



FIG. 18.—Throwing prone, advancing

the throwing positions on the carter, transverse trench, angle, and vertical targets courts.

SECTION II

FUZING AND THROWING FUZED PRACTICE GRENADE

596. *Explanation and demonstration.*—The instructor will explain to the class the firing mechanism and fuze assembly, both with detonator and igniter, the method of ignition and the resultant action on the grenade content. He will demon-

strate to and practice the class in assembling the fuze assembly to the practice hand grenade after careful explanation of the possibilities of accident from carelessness or ignorance and emphasizing the safety precautions.

597. *Practice.*—The class will fuze practice hand grenades and throw them over the grenade court course, as previously explained for the dummy grenade, but not at distances less than 25 yards; form and accuracy will be improved and all the safety precautions be observed. The coach and pupil method described in Volume I will prove of great assistance. While there is no explosive other than the detonator in the practice grenade this latter has sometimes fragmented the grenade. Instructions must be followed by tests in this, as in all other instruction with the grenade, to minimize the danger of serious accident from ignorance or carelessness.

Section III

THROWING FUZED LIVE GRENADES

598. *Object of previous training.*—Throwing live grenades with form, accuracy, and confidence is the object of previous training in grenades. This is the period where the instructions previously taught must be followed in detail to insure successful throwing and safety. The instructor will make sure that every member of the class remembers and understands the safety precautions.

599. *Additional precautions.*—*a.* The maximum number of men in any instruction group, exclusive of the assigned instructors, will be two—the coach and his pupil. When throwing the fragmentation grenade this group is protected from all other groups and from the front by sandbag screens not less than 20 inches thick, or is in the trenches where traverses will protect individual groups. The object of this protection is to insure against injury to personnel either from the front or flanks. When throwing the smoke hand grenade this protection is not necessary; however, care should be taken that the grenade is always thrown at least 20 yards from the grenadier. When throwing the lachrymatory hand grenade no protection is necessary, but care should be taken that the wind is blowing in such a direction that it will not bring the gas back upon the grenadiers.

b. A steel helmet will be worn by each soldier when throwing live grenades and by each individual within a radius of 250

yards of where high explosive grenades are thrown. Fragments are often blown high and descend with sufficient velocity to cause severe wounds.

c. When using the type A fire trench (the most desirable type of protection) or similarly constructed shelter, the instructor assigns each coach and pupil group to their place in the firing bay. The firing bay should be to the thrower's right. The thrower should place himself far enough from the wall of the trench so as not to strike the wall with either the hand or grenade when throwing. *When throwing keep the throwing hand below the level of the parapet. Do not expose the hand any more than you would expose any other part of the body.* The coach places himself to the right of and about 3 or 4 feet from the thrower. If a grenade is dropped after the safety pin has been pulled out, safety is insured by picking up the grenade and throwing it out of the trench or by clearing the trench of personnel. If conditions warrant the grenade being recovered and thrown from the trench or other position, this action is performed by the pupil. That method of safety insurance is used which insures greatest safety to life and limb of all concerned. The coach is responsible for his pupil, and he should never quit his post and expose his pupil to danger.

600. *Limit.*—It is not essential that more than a few live grenades be thrown by the class or that all throw each kind. The important points are that each one should readily recognize the different kinds of hand grenades, the different fuze assembled, which of the latter are used with each particular grenade, and the safety precautions in handling them.

Section IV

FIRING RIFLE GRENADES

601. *General rules for firing grenades.*—*a.* The rifle is placed either in a mechanical support such as a firing rack or is supported by the soldier. If supported by the soldier he will be in either the kneeling or the prone position. The butt of the rifle rests fully and firmly on the ground.

b. For individual training the firer will first fire three dummy grenades without an assistant.

c. After individual training the two-man group fires three dummy grenades. The pupil acts as the firer and the coach the assistant. The assistant kneels or lies down, depending upon the position from which the grenades are being fired, in-

serts the grenade into the discharger and verifies the deflection. By selecting a reference point in line with the rifle, subsequent corrections can be made.

d. The following firing order sequence is followed. During the first stages of training the firer gives each command and then executes it. After the firer knows the sequence and executes it properly, he may eliminate the commands, but the sequence must be followed.

(1) Open bolt.
(2) Insert rifle rod in barrel.
(3) Load. (Always use the rifle grenade blank cartridge.)
(4) Verify elevation.
(5) Verify deflection.
(6) Fire. (Lower the head so that it is below the muzzle of the rifle and squeeze the trigger without disturbing the elevation and deflection of the rifle.)

602. *Firing from the kneeling position.—a.* Kneel on the right knee, left knee and left toe pointing toward the target so that the elevation and deflection of the rifle can be verified.

b. Brace the left side of the stock against the muscles of the right side of the right leg just above the knee.

c. Support the left elbow on the left leg just above the knee.

d. With the barrel of the rifle to the rear grasp the small of the stock with the right hand so that no part of the hand is nearer than 1 inch from the cocking piece.

e. With the left hand grasp the rifle at some convenient place between the upper and lower bands.

f. Incline the rifle at such an angle as to project the grenade the desired distance. (See range table.)

g. Adjust the rifle so that the target and the axis of the rifle bore lie in the same vertical plane and then make allowance for wind by moving the muzzle to the right or left.

603. *Firing from the prone position.—a.* Assume the prone position, line of the body making an angle approximately 20° to the left from the line of fire, and rest the butt of the rifle on the ground about 6 inches in front of the right shoulder.

b. With the barrel of the rifle to the rear grasp the small of the stock with the right hand so that no part of the hand is nearer than 1 inch to the cocking piece. Rest the right elbow on the ground.

c. With the left hand grasp the rifle at some convenient place between the lower band and the trigger guard. Rest the left elbow on the ground.

53235°—27——28

d. Incline the rifle at such an angle as to project the grenade the desired distance. (See range table.)

e. Adjust the rifle so that the target and the axis of the rifle bore lie in the same vertical plane and then make allowance for wind by moving the muzzle to the right or left.

604. *Range table for smoke (W. P.) and lachrymatory (C. N.) rifle grenades.*

Angle of rifle with ground	Burst	Range, in yards
Degrees		
45	Air bursts about 15 yards above ground	215
40	Air bursts about 10 yards above ground	235
35	Ground bursts	235
30	do	225
25	do	215
20	do	195
15	do	170

605. *Firing live rifle grenades.*—Firing live grenades with form, accuracy, and confidence is the object of previous training in rifle grenades. This is the period where instructions previously taught must be followed in detail to insure successful firing and safety. The class will be assembled on the rifle grenade court and each one tested for precautions in assembling and firing live grenades. If trenches have been constructed each two men will occupy one bay. If there is no such protection each group of two must be separated by at least 30 yards. Assembly of grenades will be at the firing points, each group of two assembling each grenade just before firing.

606. *Precautions.—a.* Only one man will be in a firing bay when the live grenade is actually fired, he being the firer. Just before squeezing the trigger the firer lowers his head so that the top of his helmet is below the muzzle of the rifle. This will usually insure him against injury in case of a premature. The coach and pupil work as a group up until the time the grenade is actually fired. The coach takes cover when the grenade is actually fired. The firer is protected from the front and all other groups by sandbag screen not less than 20 inches thick or is in a trench where the traverses will give protection. The object of this protection is to insure against

injury to personnel from the front or flanks by fragments or a possible premature.

b. A steel helmet will be worn by each grenadier when firing live rifle grenades and by each individual within a radius of 250 yards from where explosive grenades are fired or exploded. Fragments are often blown high and descend with sufficient velocity to cause severe wounds.

c. When traversed trenches or similarly constructed shelters are used the instructor assigns each coach and pupil group to their place in a firing bay. The balance of the squad should take position in rear of the traverse so as to be under cover and also be ready to take their place in the firing bay when their turns arrive.

SECTION V

POLICE OF GRENADE RANGE AND DESTRUCTION OF DUDS

607. *Police of range after throwing live grenades.—a.* After throwing or firing live grenades the range will be carefully policed under the direct supervision of a commissioned officer who is thoroughly familiar with the prescribed methods of destroying grenades, for the purpose of locating and destroying all grenade duds. The personnel engaged in this work must be given instructions as to the exact procedure to be followed and made thoroughly familiar with the danger of handling or disturbing the duds.

b. All grenades covered in these regulations are of the "time fuze" type—that is, they are designed to explode on the burning through of a piece of time fuze. This type of grenade dud can be safely picked up and destroyed at some central point, except that before picking up a hand grenade equipped with a Mark II or Mark III fuze assembly the soldier should look at the striker and assure himself that it is all of the way down against the primer. If the striker is not all of the way down against the primer but has only rotated part of the way it is called a "hung striker." Such a grenade dud should not be picked up but should be destroyed where it lies. A grenade dud should never be taken apart.

608. *Method of destroying grenade duds.—a. Demolition with T. N. T. blocks.*—Hand or rifle high-explosive grenade duds can be most efficiently destroyed by means of ½-pound blocks of T. N. T. When T. N. T. blocks can not be obtained dynamite may be substituted. When it is considered safe to move them,

not to exceed 30 or 40 grenades are stacked in a small hole dug in the ground about 1½ feet or more in depth, care being taken that the bodies of the grenades are in close contact. For example, 40 grenades may be arranged by placing 4 side by side and 4 more base to base with those for the bottom layer, and putting 4 similar layers directly on top of this. A number of ½-pound T. N. T. blocks are then placed on top of the grenades. The number of T. N. T. blocks to be used will depend on the number of grenades to be destroyed at one time. One block is sufficient for 6 grenades piled in 3 layers of 2 grenades each. At least 2 blocks should be used on 12 grenades piled in 3 layers of 4 grenades each. Five or six blocks should be used to explode 30 or 40 grenades. Where as many as 5 or 6 T. N. T. blocks are used, it is preferable to arrange these by placing 4 of them side by side on top of the grenades, in close contact, the remainder being placed on top of this layer. The desired length of time fuze is cut (time fuze should be tested to determine rate of burning). One end of the fuze is placed carefully in the open end of a No. 8 detonator until it just touches the fulminate or mercury charge. Crimp the open end of the detonator tightly to the fuze by means of a fuze crimper, care being taken not to press the fuze tightly against the fulminate of mercury charge. (A cap should never be crimped to a piece of fuze with the teeth as this is extremely dangerous.) The detonator is inserted into one of the topmost blocks of T. N. T. The grenades and T. N. T. blocks are then covered by a mound of earth at least a foot high in order to obtain by this tamping the maximum efficiency from the T. N. T. With the grenades underneath the T. N. T. charge, there is less scattering of fragments, and any grenades which happen to escape destruction will be left in the crater. These can then be destroyed by a second shot. When it is desired to destroy a grenade dud where it lies, place one block of T. N. T. so that it is touching the grenade and explode the charge by means of a detonator and time fuze. The amount of earth covering used in the method described is entirely insufficient to prevent fragments of the grenades from being thrown to a considerable distance. It is not unusual for these grenade fragments to be thrown as far as 500 yards. All roads and other approaches to the range should be properly guarded or red flags and warning notices posted. A safe shelter or bombproof, built of logs or other suitable material, must be erected on the range so that the personnel carrying out the work can take shelter when the

blasts are fired. No blast will be fired without every precaution being taken to insure that no one is within range of fragments or liable to come within range before the charge explodes. The method described above is suitable for destroying explosive grenades only. Phosphorus or lachrymatory gas grenades are more safely and efficiently destroyed by means of fire, as described below.

b. Demolition by means of fire.—A pit is dug in the ground about 2 feet square by 3 feet deep, and a loosely fitting cover of iron plate or heavy boards provided, which can be placed over the pit when necessary. A good fire of wood or coke is built in the bottom of the pit, and when a substantial bed of hot coals has been produced, one of the grenades to be destroyed is dropped in, the cover quickly dropped in place, and the operator takes shelter *until the grenade has exploded.* If there is unusual delay in exploding, no attempt should be made at the time to investigate the cause. The only safe time to investigate is after the fire has burned out and the pit is cold. Grenades should be put in the fire one at a time so that there will be absolutely no doubt as to whether or not there is an unexploded grenade in the pit. High-explosive grenades may explode with sufficient force to blow the cover off of the pit or to demolish it unless it is made of heavy material. This method is especially suitable for destroying phosphorus grenades which contain no explosive charge except the detonator, and which therefore are not easily disposed of by the use of T. N. T. blocks. Attempts to destroy phosphorus grenades by means of the T. N. T. blocks will result in scattering burning phosphorus around the field; particles of unburned phosphorus will also be driven into the loose earth in the crater where it may ignite when stirred up at some future time. By the fire method, the phosphorus is completely destroyed, and practically none of it is thrown out of the pit if a cover is provided, as prescribed above. When burning lachrymatory gas grenades care should be taken that the wind is favorable and will not blow the gas in a direction to injure personnel. When these grenades are destroyed one or two at a time the tear gas is not effective at a greater distance than about 400 yards.

c. Inspection of range after policing is completed.—After the destruction of duds has been completed, the officer in charge of the work will personally superintend a thorough police of the area in order to insure that no duds have been overlooked. This is essential, both for the protection of troops using the range at a future time and for guarding against accidents to people who may carry away duds as souvenirs.

SECTION VI

THE GRENADE COURT

609. *General plan.*—The accompanying plans of grenade courts are suggested as offering all the conditions under which throwing will be done. A definitely laid out court is a necessity for training large classes where the time is limited and a fixed program must be followed. It eliminates indefinite procedure. With the exception of the trenches or similarly constructed shelter which must be had for live grenade throwing, the remainder of the court may be laid out in a short time and with very little material.

610. *The main court, court No. 1* (fig. 19).—*a.* Place six rows of lines as indicated, each row to consist of two lines of canvas or target cloth placed 1 yard apart, indicating a trench. The strips of cloth should be about 2 inches wide. Each court should be 40 yards wide and 50 yards long. At each end construct four spider webs, each composed of three concentric circles, 1, 2, and 3 yards in diameter, respectively, outlined by cloth strips. Small stakes approximately 18 inches long, with pieces of cloth nailed on the top, placed in the center of each web, give definite targets at which to aim.

b. This court will conveniently accommodate 25 men. Where a large class is to be instructed, the spider webs should be eliminated and both ends of the court used, thus increasing the capacity to 50 men. During preliminary training in throwing the men should not attempt to throw more than 25 yards, so there is no danger of the two sections throwing into each other.

611. *The throwing pits, court No. 2* (fig. 19).—A pit 8 feet long, 4 feet wide and 7 feet deep serves as a throwing trench. Along the longitudinal axis dig a second pit 18 feet long, 2 feet wide, and 1 foot deep. At an angle of 45° to the right and left of the front edge of the throwing pit, and at a distance of 20 yards, dig a pit 18 feet long, 2 feet wide, and 1 foot deep so that the longitudinal axis of each pit is perpendicular to the 45° line.

612. *The crater, court No. 3* (fig. 20).—Place a strip of canvas 4 feet long and 2 inches wide on the ground. At a distance of 25 yards to the front dig a circular pit 3 yards in diameter and not less than 18 inches deep. Throw with the toe of the leading foot on the tape. To increase the number of men who can use this court at one time the throwing tape can be placed

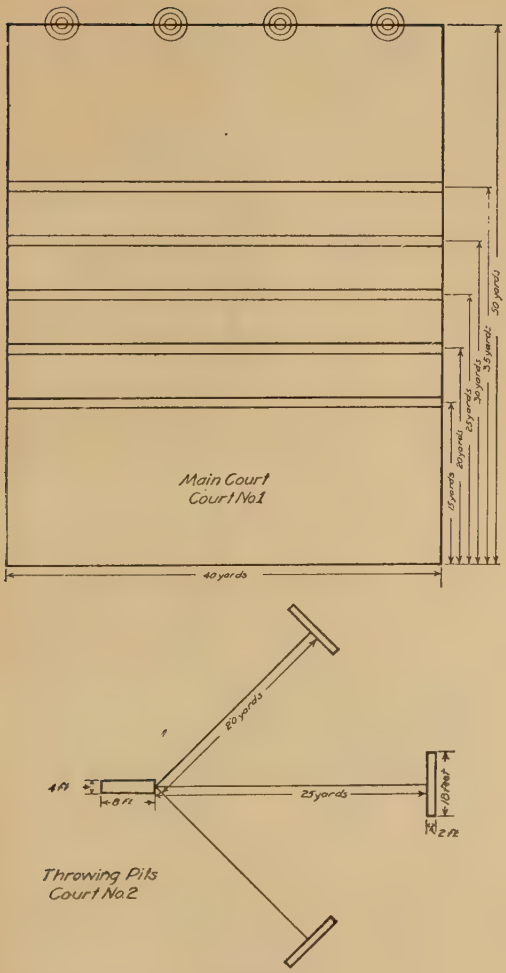

Main Court
Court No1
40 yards
60 yards
55 yards
50 yards
45 yards
40 yards
35 yards
30 yards
25 yards
20 yards
Throwing Pits
Court No2
20 yards
25 yards
4 ft
8 ft
2 ft

FIG. 19

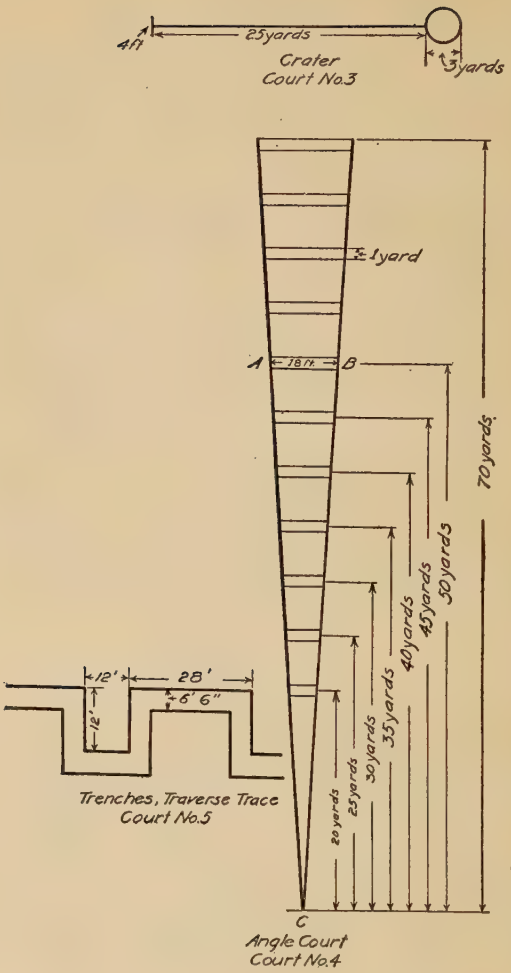
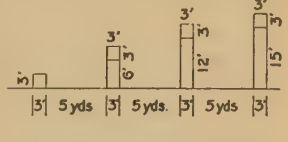

4ft
25yards
3yards
Crater
Court No.3
1yard
A
18ft.
B
70yards
50yards
45yards
40yards
35yards
30yards
25yards
20yards
12'
28'
6' 6"
12'
Trenches, Traverse Trace
Court No.5
C
Angle Court
Court No.4

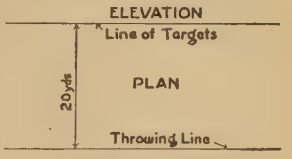
FIG. 20

in a circle around the crater with the center of the crater as the center of the circle and a radius of 26½ yards. An interval of 2 yards should be allowed between men.

613. *The angle court, court No. 4* (fig. 20).—Construct the angle ACB by making the line AB 18 feet long and its center 50 yards from C. The taped or outlined trenches used as targets are 3 feet wide, with their centers 5 yards apart. The thrower stands with his leading foot at C.

614. *The trenches, court No. 5* (fig. 20).—The trenches should be constructed according to the specifications for type A fire trenches. For classes of 150 men at least 12 fire bays and as many traverse bays should be made. Three masks should be placed along the trenches about 10 yards in rear of the parados. These masks are sandbag walls 7 feet high, 12 feet long, and built on the circumference of a 12-foot circle. They are for the protection of the officers who have charge of the firing line. It is better to control the fire from a position above the trenches.





VERTICAL TARGETS
COURT NO 6

FIG. 21

615. *The vertical targets, court No. 6* (fig. 21.)—The vertical targets consist of four targets. These targets represent windows at various heights from the ground. Each target has an interior dimension of 3 by 3 feet. Each target is constructed of two 4 by 4 foot pieces used for uprights and 2 by 2 foot crosspieces placed on the uprights. From left to right, one target is level with the ground, one 6 feet above ground, one 12 feet above ground, and one 15 feet above ground. The height from the ground is measured from the ground to the interior edge of the bottom crosspiece of each target.

SECTION VII

THE QUALIFICATION COURSE

616. *General provisions.—a. Object.*—The object of the qualification course is to establish a standard performance which approaches, in its demands upon the soldier's speed, accuracy,

strength, and endurance, the demands made by actual grenade combat and which will serve as a measure of proficiency in throwing and firing grenades. The course requires the application of the principal throwing and firing positions, directing grenades at representative targets. Good form is required for endurance and accuracy. Good physical condition is a requisite in order to complete the course within the time limit without loss of form or accuracy. Inert fragmentation hand grenades, Mark II, without fuze assemblies, and dummy V. B. rifle grenades, Mark I, will be used. For safety precautions no live grenades will be used in the qualification course.

b. Personnel to take the qualification course.—All members of an organization whose principal arm is the rifle and who have completed a course of grenade instruction of not less than 20 hours as prescribed in these regulations will be required to take the grenade qualification course. It may be authorized for members of an organization whose secondary arm is the rifle. The designation of such principal and secondary arms will be found in AR 35–2380.

c. Practice seasons.—The period of regular practice season is designated by corps area or department commander upon the recommendation of the post commander. It is usually as early in the calendar year as weather and climatic conditions will permit efficient performance by the soldier over the qualification course. The period of supplementary season is designated by the post commander. All persons required or authorized by regulations to demonstrate proficiency with grenades who for any reason failed to take the course during the regular practice season will take the course during the supplementary season.

d. Minimum standard of proficiency.—In order to be classed as proficient in grenade training, every company whose principal arm is the rifle must qualify as grenadiers at least 40 per cent of all persons who took the course during the regular season's practice. Every organization which fails to qualify 40 per cent of all persons who took the course during the regular season's practice will be classed as deficient in grenade training, and the commanding officer thereof will be required to state the reasons for such failure.

617. *Description of the course.*—A plan for the qualification course is shown in Figures 19, 20, and 21. The individual courts will be built as described, but the relative position of courts may vary in order to suit available ground. Courts Nos. 1 to 6, inclusive, are for hand-grenade throwing, and court No. 7 is for rifle-

grenade firing. The soldier will be required to go through the qualification course one or more times prior to record throwing and firing.

618. *Manner of conducting the course.—a.* The course is divided into the following tests:

(1) *Main court, court No. 1, test No. 1.*—The thrower places himself with the toe of his advanced foot touching the zero line and throws at the following trench lines:

15 yards.
20 yards.
25 yards.
30 yards.

Position	Standing.
Number of grenades allowed	12.
Time limit in minutes	1½.

(2) *Throwing pits, court No. 2, test No. 2.*—The thrower places himself in the throwing pit. The thrower can make observations for any and all throws by jumping up in the pit, but his hands must not touch any part of the pit. An observer may place himself in such a position as to see the strike of the grenade, but in so doing should not expose his body unnecessarily. The observer should give the necessary correction after each throw. The following pits are the targets:

Right front.
Front.
Left front.

The thrower progresses from right to left, i. e., after obtaining a hit in the target to his right front he next throws at the target to his front and after obtaining a hit in this target he throws at the target to his left front.

Position	Standing.
Number of grenades allowed	12.
Time limit in minutes	1½.

(3) *Crater, court No. 3, test No. 3.*—The thrower places himself with his advanced foot 25 yards from the nearest crater edge and throws 10 grenades. Four of the grenades are thrown from the standing position, three from the kneeling position, and three from the prone position.

Position	Standing, kneeling, and prone.
Number of grenades allowed	10.
Time limit in minutes	1½.

(4) *Angle court, court No. 4, test No. 4.*—The thrower places himself with the toe of his advanced foot touching the apex of the angle and throws at the following trench lines:

20 yards.
25 yards.
30 yards.
35 yards.
40 yards.

Position ---------- Standing.
Number of grenades allowed ---------- 15.
Time limit in minutes ---------- 2½.

(5) *Trenches, court No. 5, test No. 5.*—The thrower places himself in a firing bay. The thrower can make observations for any and all throws by jumping up in the trench, but his hands must not touch any part of the trench. An observer may place himself in such a position as to see the strike of the grenade but in so doing should not expose his body unnecessarily. The observer should give the necessary corrections after each throw. The following trench sections are thrown at:

(*a*) The adjacent firing bay, specified as bay No. 1.
(*b*) Trench in rear of traverse between bays Nos. 1 and 2.
(*c*) Fire bay No. 2.
(*d*) Fire bay No. 3.

Position ---------- Standing.
Number of grenades allowed ---------- 8.
Time limit in minutes ---------- 1½.

(6) *Vertical targets, court No. 6, test No. 6.*—The thrower, carrying 12 grenades in a sack or otherwise, advances with the frames to his left, at a range of 20 yards, and throws at the following frames:

(*a*) Ground level frame.
(*b*) Frame 6 feet above ground.
(*c*) Frame 12 feet above ground.
(*d*) Frame 15 feet above ground.

After passing the fourth frame the thrower faces about so that the frames are to his right, obtains 12 more grenades, and repeats the throwing as above.

Position ---------- Standing.
Number of grenades allowed ---------- 24.
Time limit in minutes ---------- 3½.

(7) *Court No. 7, test No. 7* (*Fragmentation rifle grenades*).—Placing himself 150 yards from the target the firer assumes a kneeling position and fires at the target.

Number of grenades allowed	6
Time limit in minutes	2

(8) *Court No. 7, test No. 8* (*Fragmentation rifle grenades*).—Placing himself 150 yards from the target the firer assumes a prone position and fires at the target.

Number of grenades allowed	6
Time limit in minutes	2

(9) *Court No. 7, test No. 9* (*Fragmentation rifle grenades*).—Placing himself 150 yards from the target the firer assumes the kneeling position in a trench so that the target is not visible when he is in the firing position and fires at the target.

Number of grenades allowed	6
Time limit in minutes	2

b. The following rules will govern as to whether a hit or a miss is to be scored:

(1) Court No. 1, test No. 1 (2) Court No. 4, test No. 4 (3) Court No. 7, test Nos. 7, 8, and 9	A grenade striking within the designated area or striking the tape or other indicator of such areas will be considered a hit.
(4) Court No. 2, test No. 2 (5) Court No. 3, test No. 3 (6) Court No. 5, test No. 5	A grenade breaking ground on the outside of the pit or trench or striking any part of the frame of a vertical target will be considered a miss.

c. When a hit is made on the first target in tests 1, 2, 4, 5, and 6 the thrower will then throw at the other consecutive targets of the test group. Advance to other targets of a test group will not be made until the preceding targets of a test group have been hit. If all grenades are thrown before the latter targets of a test group are reached or the time limit has expired these latter targets will be scored as misses. In the case of the vertical targets, court No. 6, if the allowance of 12 grenades is thrown before reaching the fourth target the targets not thrown at will be scored as misses. The thrower

will then obtain his second lot of 12 grenades and throw the second phase. Time consumed obtaining grenades for the second phase will not be deducted from the time allowance. In all rifle grenade tests a grenade striking within 30 yards of the center of the target is considered a hit.

d. General provisions for the qualification course.—(1) The uniform will be the service uniform, steel helmet, cartridge belt, and bayonet. The coat will not be worn.

(2) The time will be taken from the starting signal until the expiration of the time limit.

(3) A soldier will not continue throwing or firing after the time limit for a given count has expired. Targets not hit within the time limit will be scored as misses.

(4) The successful operation of the qualification course requires the following personnel:

(*a*) *Commissioned.—1.* One judge from an organization other than the one being tested who places himself so as to best observe the strike of grenades. When hand grenades are thrown the judge will call or signal "a hit" or "a miss" direct to the scorer. When rifle grenades are fired the judge will have a noncommissioned assistant through whom he will notify the firing line by visual signal or telephone whether the shot was "a hit" or "a miss." If the shot was "a miss" the correction, i. e., over, short, right, or left, will be signaled so that the firer will know general corrections required.

2. One timekeeper who remains with the firing line and signals the time for the test on a given court.

(*b*) *Noncommissioned.—1. One assistant to the judge.*—For hand grenade tests his services are not necessary but for rifle grenade tests this assistant assists the judge in signaling to the firer.

2. One scorer.—The scorer remains with the firing line and records the "hits" and "misses" as given by the judge.

(5) When rifle grenades are fired the judge may use visual signals or the telephone. Whatever system is used the signaling must be prompt so as not to penalize the firer. If in doubt immediately signal "Cease firing" and examine the strike. The period for examination of strikes will not be deducted from the firers' time limit and the timekeeper will give credit to the firer for exact periods of time consumed by the judge in determining doubtful strikes. If a strike is not observed by the judge the firer will fire another shot. Time will not be deducted for the repetition. For visual signaling the following

flags are suggested for "hits," "misses," and "commence firing."

Hit	White.
Miss	Blue.
Commence firing	Exposure of both white and blue flags.

The *red flag* will always indicate "Cease firing." Before an individual leaves shelter he will personally expose the red flag, leaving it exposed until he returns and personally takes down the *red flag.*

(6) The course must be started and finished in the same day for any individual.

619. *Method of scoring.—a.* The hand-grenade test comprises a maximum of 34 hits, distributed as follows:

Main court, court No. 1, test No. 1	4
Throwing pits, court No. 2, test No. 2	3
Crater, court No. 3, test No. 3	10
Angle court, court No. 4, test No. 4	5
Trenches, court No. 5, test No. 5	4
Vertical target, court No. 6, test No. 6	8
Total	34

For each hit obtained as prescribed in paragraph 33 the soldier will be given one point.

b. The rifle-grenade test comprises a maximum of six hits, distributed as follows:

Court No. 7, test No. 7	2
Court No. 7, test No. 8	2
Court No. 7, test No. 9	2
Total	6

The soldier is allowed six dummy rifle grenades for each test to be fired as prescribed in paragraph 33. As soon as the target has been hit twice the next test is fired. For each hit obtained the soldier will be given one point.

c. The total possible is 40 points. The following table shows the form for scoring and represents a 100 per cent score:

Grenadier's test

Court No.	Test No.	Hits
1	1	4
2	2	3
3	3	10
4	4	5
5	5	4
6	6	8
7	7	2
	8	2
	9	2
Total		40

Certified correct_____

Final qualification_____
Date_____
Name_____
Serial No_____
Rank_____
Organization_____
Station_____
Prior qualification_____
Remarks_____

620. *Requirements for qualification.*—All officers and enlisted men who are required or authorized to demonstrate proficiency in the use of hand and rifle grenades will be graded according to their proficiency, as *grenadiers* or unqualified. The requirement for qualification as *grenadier* is 32 points, i. e., 80 per cent of the possible total of 40 points.

Section VIII

QUALIFICATION ORDERS AND INSIGNIA

621. *Qualification orders.*—Immediately after the close of the qualification course the names of men who qualify as grenadiers will be published in orders. These orders will be issued by commanders empowered by AR 35–2380 to issue qualification orders.

622. *Insignia.—a.* To each officer and enlisted man qualifying for the first time as a grenadier certain insignia (as provided for in AR 600–35), indicating their skill with grenades, will be issued.

b. Insignia may be worn during the period for which the qualification is held. Officers not required to take the course may wear the insignia of last qualification.

623. *How insignia are obtained.*—For procedure in obtaining insignia, see TR 150–10.

53235°—27——29

BASIC SPECIFICATIONS FOR QUALIFICATION

624. *The rifle.—a.* Name the principal parts.

b. To the extent authorized for the soldier, dismount and assemble the piece.

c. How, when, why is the piece cleaned.

625. *The automatic rifle.—a.* Name the principal parts.

b. To the extent authorized for the soldier dismount and assemble the piece.

c. How, when, why is the piece cleaned.

626. *The automatic pistol.—a.* Name the principal parts.

b. To the extent authorized for the soldier, dismount and assemble the piece.

c. How, when, why is the piece cleaned.

627. *Marksmanship. a.*—Correct answers to 80 per cent of the questions in the body of the text "Examination on preparatory instruction."

b. Attainment of qualification of marksman or better in range firing, record course, with the weapon with which armed, attainment of "Expert" with the bayonet and attainment of "grenadier" with grenades.

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
U. S. GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
$1.35 PER COPY

▽

LILLIAN MICHELSON
RESEARCH LIBRARY
(GOLDWYN STUDIOS COLLECTION)
THE HOLLYWOOD GROUP
6233 HOLLYWOOD BLVD.
213-462-8884 213-654-7177